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ABSTRACT

K-MUST, Kansas Manpower Utilization System for Training, provides an information base and management tools to be used by occupational education planners and administrators to optimize the societal and student benefits received from the expenditure of vocational monies. This first part of a two part report describes techniques used to develop, process, and analyze data. The system is designed in an integrated modular format in which many of the modules are independent systems. Sixteen modules are included. Information on each varies from simply a description of the module to a detailed description including information on data collection, preparation, and outputs; computer software; and procedures. The modules are: student accounting system, non-public supply, demand, placement, upgrading training needs projection, cost/benefit, potential student, student interest, physical facility, disadvantaged and handicapped, interfacing, interstate coordination, optimum program mix, program application evaluation, Kansas vocational education budgeting, and data dissemination and feedback. Extensive use is made of figures and tables. Appended materials include three types of codes, definitions, and related aids for teachers. (AG)

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FINAL REPORT

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VOLUME I:

SYSTEM DOCUMENTATION

KANSAS MANPOWER UTILIZATION SYSTEM FOR TRAINING

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Division of Vocational Education
Kansas Department of Education
and
Department of Adult and Occupational Education
Kansas State University

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KANSAS MANPOWER UTILIZATION SYSTEM FOR TRAINING (K-MUST)

FINAL REPORT

VOLUME I: SYSTEM DOCUMENTATION

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August 1973

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FOREWORD

It is imperative that vocational and technical education be relevant to the needs of society. To design vocational and technical education for today's complex society, educational administrators need a wide variety of information for input into the decision making process. The Kansas State Department of Education has developed a management information system which provides data for administrative use. The purpose of this report is to document the management information system used in Kansas.

This report consists of two volumes: the first describes techniques used to develop, process and analyze data and the second describes supplemental studies which were used to test the system. The principal users of this report should be those who operate the system for Kansas. Secondary users of the report include those who operate or design systems for other states.

Because this management information system operates in an ever changing environment, the system itself is in a continuous state of change. The documentation presented here describes the system as it was in August of 1973. Three major changes have occurred in the system between the August date and the date this Foreword was written, i.e., the student accounting system now uses a keypunch processing procedure instead of an OpScan procedure, the modified matrix approach now projects for 561 occupations instead of 166 occupations, and the budgeting system has been revised to reflect political considerations.

We, in Kansas, readily admit that there are many flaws in the system as it now stands, however, we believe that it meets the needs of Kansas better than any other system available at this time. When more advanced techniques are developed, they will be incorporated into the Kansas system.

John Snyder
Asst. Commissioner of Education
Topeka, Kansas
November, 1973

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This report is the result of the efforts of many people. Special thanks must go to Mr. John Snyder, Assistant Commissioner of Education and Dr. Robert Meisner, Head of the Department of Adult and Occupational Education at Kansas State University, without whose help and support this project would not have been possible.

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Mr. Larry Devane, Director of K-VIEW, has given complete cooperation in coordinating his project's efforts with this project.

Dr. Howard Kittleson of Kansas State University has provided ideas and support for the project.

Advice and help on software development was given by Dr. Tom Gallagher, director of the Kansas State University computer center.

Gordon Pulliam, President of Pulliam Associates, edited the two volumes.

Last, but definitely not least, this project has depended to a great extent on the support of our clerical staff, Mrs. Alice Bach, Miss Angie Sharpe, Mrs. Kathleen Walker, and Miss Kathy Ziegler.

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TABLE OF CONTENTS

Page

LIST OF TABLES vii
LIST OF FIGURES. ix

Chapter

1. INTRODUCTION 1
   Background 1
   Purpose of the K-MUST System 1
   System Design Parameters 1
   System Modules 2
   System Module Integration. 7
   Time Parameters. 10

2. STUDENT ACCOUNTING SYSTEM MODULE 12
   Background 12
   General Module Description 12
   Introduction to Software Package 17
   Reports. 20
   Data Collection. 35
   Programs 48
   Files. 159
   Implementation 200

3. NON-PUBLIC SUPPLY MODULE 234
   Introduction 234
   System Description 235

4. DEMAND MODULE. 240
   Background 240
   General Module Description 241
   Data Collection. 243
   Data Preparation 249
   Catalog of Module Programs 259

5. PLACEMENT MODULE 291
   Introduction 291
   General Module Description 291
   Data Collection. 292

BEST COPY AVAILABLE

Chapter Page

Data Preparation 297
Data Processing. 297

6. UPGRADING TRAINING NEEDS PROJECTION MODULE 309

Background 309
General Module Description 309
Data Analysis. 310

7. COST/BENEFIT MODULE. 314

Assumptions. 315
Limitations. 315
Definitions. 316
Cost/Benefit Modle 317
Data Collection. 319

8. POTENTIAL STUDENT MODULE 322

Background 322
General Module Description 322
Assumptions. 322
Procedures 323
Output 325

9. STUDENT INTEREST MODULE. 327

Background 327
General Module Description 327
Definitions of the Occupational Groupings. 329

10. PHYSICAL FACILITY MODULE 333

Background 333
Definitions Used in the Module 333
General Module Description 335
Procedures for Analysis. 338

11. DISADVANTAGED AND HANDICAPPED MODULE 340

Background 340
General Module Description 340
Data Collection. 342
Data Preparation 343
Data Outputs 343
Computer Software. 348

12. INTERFACING MODULE 381

Background 381
General Module Description 382
Entering Supply Data 383

Chapter Page

Entering Demand Data 397

13. INTERSTATE COORDINATION OF PLANNING MODULE 405

Introduction 405
System Description 405
Summary. 409

14. OPTIMUM PROGRAM MIX MODULE 412

Need for the Module. 412
General Module Description 412
Data Collection. 420
Data Preparation 421
Computer Processing. 424

15. PROGRAM APPLICATION EVALUATION MODULE. 426

Need for the System. 426
General System Description 426
Program Rating Equation. 427
Criterion Definitions. 429
Coding Sheets. 453
Keypunching. 453
Determining Weights. 453
Coding and Keypunching Weights 464
Description of Computer Software 464
Operation Instructions 464

16. KANSAS VOCATIONAL EDUCATION BUDGETING MODULE 494

Need for the System. 494
General System Description 494
Input Description. 495
Definition of Input Variables. 495
Preparing Data for Computer Input. 498
Computer Processing. 500

17. DATA DISSEMINATION AND FEEDBACK MODULE 515

Introduction 515
System Description 515

APPENDIX 519

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LIST OF TABLES

Table | Page
1. Print Code Description for Update Detail Listing 25
2. Print Code Description for Select Detail Listing Not Presented in Table 1 30
3. Print Code Description for Summary Report 36
4. Industry Codes and Corresponding Titles Used in the Modified Matrix Approach 246
5. Occupational Codes and Corresponding Titles Used in the Modified Matrix Approach 252
6. Factors Used to Determine Handicapped Populations 324
7. Interfacing Scheme 384
8. Percentage Used to Factor Program Completions to Reflect Works Entering Labor Market 391
9. Source of Data and Calculations Used in the Interface 398
10. Possible Programs in the Optimum Program Mix 414
11. Contribution Values for Criterion 10 Based on Disadvantaged and Handicapped Percentages of Regional Population 439
12. Student Interest Criterion Values by Program 442
13 A. Criterion Values for Manpower Need by Program and Region - Agriculture Education 445
13 B. Criterion Values for Manpower Need by Program and Region - Business and Office Education 446
13 C. Criterion Values for Manpower Need by Program and Region - Health Education 447
13 D. Criterion Values for Manpower Need by Program and Region - Home Economics Education 448
13 E. Criterion Values for Manpower Need by Program and Region - Industrial Education 449
14 A. Competition Criterion Values by Program and Region - Agriculture Education 454
14 B. Competition Criterion Values by Program and Region - Business and Office Education 455
14 C. Competition Criterion Values by Program and Region - Health Education 457
14 D. Competition Criterion Values by Program and Region - Home Economics Education 458

Table | Page

14 E. Competition Criterion Values by Program and Region - Industrial Education 459

LIST OF FIGURES

Figure Page

1. Integration Relationships Between K-MUST Modules 9
2. Time Frame of the K-MUST System 11
3. Student Accounting System Flow Chart 13
4. Optical Scan Enrollment Form 14
5. Completion Card 16
6. Follow-Up Card 18
7. Sample Page of Enrollment Form Error Report 23
8. Sample Page of Updated Detail Listing Report 24
9. Sample Page of Selective Detail Listing Report 29
10. Sample Page of 3138 Report 33
11. Sample Page of 3139 Report 34
12. Sample Page of Enrollment Detail Report 39
13. Sample Page of Enrollment Summary Report 40
14. Sample Page of Completion Detail Report 41
15. Sample Page of Completion Summary Report 42
16. Sample Page of Placement Detail Report 43
17. Sample Page of Placement Summary Report 44
18. K-Sheet 45
19. Q-Sheet 47
20. System Flow Chart 49
21. Source Listing of INIT 51
22. Output Summary of MSGFILE 56
23. Flow Chart of TRANS. 57
24. Source Listing of TRANS 58
25. Summary Page for SORTER 76
26. Source Listing of SORTER 77
27. Sample from Card Error File 89
28. Example Duplicate, Replacement, and Deletion Message File 90
29. Example Summary Page for UPDATE 91
30. Flow Chart for UPDATE 92

BEST COPY AVAILABLE

Figure Page

31. Source Listing of UPDATE 97
32. Summary Page of SUBSET 119
33. Flow Chart of SUBSET 120
34. Source Listing of SUBSET 122
35. Flow Chart of LISTSTU 130
36. Source Listing of LISTSTU 132
37. Flow Chart of FEDERAL 143
38. Source Listing of FEDERAL 147
39. Flow Chart of SUMMARY 160
40. Source Listing of SUMMARY 167
41. JCL for INIT 201
42. JCL for Creating the CODELST File 203
43. JCL for Sort Field Cards 204
44. JCL for Cataloging Data Sets 205
45. Tape Catalog Procedure 207
46. Card Catalog Procedure 207
47. Source Listing of TEST 207
48. Flow Chart for Updating the Master File 210
49. Source Listing of UPDATE 211
50. Source Listing of FIXUP 215
51. Source Listing of BACKUP 220
52. Flow Chart of REPORTS 222
53. Source Listing of REPORTS 223
54. Charge Sheet for COMPUTER CENTER 229
55. TRANS Program Control Form for State COEBAZ (Kansas) 228
56. Enrollment Forms Control Form for Tape 7387ED 230
57. New Student Control Form for Tape 939SN1 230
58. UPDATE Program Control Form for State COEBAZ (Kansas) 231
59. Master File Control Form for Tape 7351ED (Back-up - 9511BK). . 232
60. Completion Control Form for Tape 7398CM 232
61. Private School Cover Letter and Survey Form 237
62. Non Public Supply Module Flow Chart 239
63. Flow Chart of the Modified Matrix Approach 242

Figure Page

64. Card-Record and Card-File 250
65. Card Record for DOT NAME-FILE 251
66. Card Record in REPL-FACTOR-FILE 257
67. Card Record for COUNTY-NAME-FILE 258
68. Card Record in CO-ADJ-FILE 260
69. Card Record in YEAR-CONTROL-FILE 261
70. Source Listing for KMUST01 262
71. Source Listing for KMUST02 263
72. Source Listing for KMUST04 264
73. Flow Chart for KMUST05 267
74. Source Listing of KMUST05 268
75. Flow Chart of KMUST07 272
76. Source Listing of KMUST07 273
77. Flow Chart for KMUST10 276
78. Source Listing for KMUST10 280
79. Sample Output Page of KMUST10 290
80. Cover Letter for Employers 293
81. Example Page from Listings of Vocational and Technical Programs 294
82. Sample Page of Employer Listing 295
83. Action Chart for Placement Module 296
84. Tape Input Layout for KMUST03 298
85. Card Input Layout for KMUST03 299
86. Flow Chart for KMUST03 300
87. Source Listing of KMUST03 302
88. JCL Setup for KMUST03 307
89. Questionnaire for Skills Upgrading Employer Survey 311
90. Sample Skills Upgrading Table 312
91. The Societal Cost/Benefit Model 318
92. Action Chart of the Cost/Benefit Module 321
93. Sample Page from the Potential Student Table 326
94. Sample of the K-VIEW Reference Card 328
95. Action Flow Chart of the Student Interest Module 330

Figure Page

96. Facility Utilization Questionnaire 336
97. Card Layout for the General Population File 344
98. Card Layout for the Program File 345
99. Cards in the Header File 346
100. Sample Page of Output Type One 347
101. Sample Page of Output Type Two 349
102. Sample Page of Output Type Three 350
103. Sample Page of Output Type Four 351
104. Flow Chart of P-H 352
105. Source Listing of P-H 362
106. JCL Setup for P-H 379
107. Sample Interfacing Page 390
108. Sample Page from Kansas City SMSA Interfacing 408
109. Interstate Planning Module (Alternative 1) 410
110. Interstate Planning Module (Alternative 2) 411
111. Coding Sheet LP-1 422
112. Card Layout for a Single Equation of the Linear Programming Model. 423
113. JCL Setup for Linear Programming Model 425
114. System Flow Chart for Program Application Evaluation 428
115. Program Application Form 431
116. Coding Sheet 462
117. Keypunch Format for Program Cards 463
118. Keypunch Format for Weight Cards 465
119. Program Application Evaluation System Software Flow Chart 466
120. Program Application Evaluation System Software Listing 475
121. Sample Output (Individual Program) 489
122. Sample Output (Program Type) 490
123. Sample Output (All Program Summary) 491
124. Inserting Weight and Program Cards in JCL 492
125. A Graphic Display of the Budgeting System Concept 496
126. Card Type One Layout 499
127. Coding Sheet F-1 501

BEST COPY AVAILABLE

Figure Page

128. Card Type Two Layout 502
129. Software Setup for Budgeting System 503
130. Flow Chart of Computer Software for Budgeting System 505
131. Budgeting System Software 508
132. Sample Computer Output for Budgeting System 514
133. Data Dissemination System Flow Chart 516

Chapter 1

INTRODUCTION

BACKGROUND

Two of the major problems in planning and administering occupational education are (1) the lack of adequate information and (2) the lack of management tools. A system designed to facilitate planning should, therefore, provide both information and a realistic approach for using the information. Additionally, the system must be structured so that operational costs are in some reasonable balance with the benefits derived.

The state of Kansas has officially recognized these problems and the Division of Vocational Education of the Kansas State Department of Education contracted with Kansas State University for the development of a management information system. The system developed under this contract is called the Kansas Manpower Utilization System for Training (K-MUST) and is documented in this final project report.

PURPOSE OF THE K-MUST SYSTEM

The K-MUST System is designed to provide an information base and management tools which can be used by occupational education planners and administrators to optimize the societal and student benefits received from the expenditure of vocational monies.

SYSTEM DESIGN PARAMETERS

1. The system is designed in an integrated modular format such that many of the modules are independent systems.
2. System operating costs are within financially feasible limits, i.e., contributions derived from use of the data justify the expense of system operation.

3. The System is a real time system, i.e., information is available when needed.

4. The system is designed to meet recurring information needs, i.e., the system is continually cycling. (Note: One shot information needs can often be satisfied using the accumulated data bank.)

5. The information generated by the system is within accuracy requirements established by the Kansas State Department of Education.

SYSTEM MODULES

1. Student Accounting System Module

This module is the technique used to gather, process and report data on enrollments, completions and placements relative to public school programs funded under the 1968 Amendments to the 1963 Vocational Act. Federal OE 3138 and OE 3139 Reports are among the major outputs generated through this module. Other outputs include data for the State Plan, data for legislative purposes, data for the annual K-MUST Report, Enrollment, Completion and Placement Summaries for the Evaluation Module and other student related reports as required.

The module uses an optical scan form to collect initial enrollment data on each student. Special, pre-printed, computer cards are used to gather completion and placement data. Teachers are responsible for gathering completion and placement data on the programs which they teach. The system can accommodate a one, three and five-year follow-up as required.

2. Non-Public Supply Module

This module is a composite of three sub-modules designed to collect manpower supply data from (1) public programs not funded under the 1968 Amendments, (2) private schools and (3) MDTA programs, Apprenticeship programs (other than those adult supplementary programs funded under the 1968 Amendments) and Bureau of Corrections programs. Only enrollment data is collected from these sources with completion and placement figures being estimated using past research.

3. Manpower Demand Projection Module

The technique used to project manpower demand is a modified version of the BLS Matrix approach. Dun and Bradstreet Market Identifiers (R), Employment

Security Commission Unemployment Insurance records, and other readily available sources of information are used to estimate employment by Standard Industrial Classification in the state and eleven regions within the state. Using factors found in the BLS Matrix (modified for use in Kansas), employment by Standard Industrial Classification is broken into employment by occupation and estimates of expansion needs are projected. Using factors related to the Matrix, an estimate of replacement needs for each occupation is generated. Total manpower needs are the sum of expansion needs and replacement needs. Data generated using this technique is within accuracy parameters established by the Kansas State Department of Education (see Downing and Daniels, Volume II).

4. Placement Module

This module utilizes the firm identification data purchased from Dun and Bradstreet Inc. to inform potential employers about graduates and graduates about potential employers. The 500 largest (in terms of number of employees) firms in Kansas are mailed lists of training programs. These lists contain type and location of the program, name of the teacher, expected number of graduates and expected graduation date. Graduates have access to a list of potential employers by Standard Industrial Classification generated from the Dun and Bradstreet Market Identifiers (R). The purpose of this module is to establish contact between graduates and potential employers with the goal of a higher placement rate.

5. Upgrading Training Needs Projection Module

This module projects the need for training to upgrade the skills of workers in the Kansas work force. Data collected from 1,800 Kansas employers along with occupational profiles developed by the Manpower Demand Projection Module are used to produce these projections. The Kansas employers are asked how often employees of certain types needed upgrading training. Their answers are compiled into a percent of employees (by occupation) who need upgrading training annually. These percentages multiplied times the number of workers result in estimates of the number of workers (by occupation) who need upgrading annually. Additional information such as who should be responsible for the training is incorporated in the output.

6. Cost/Benefit Module

This module is a simple technique for evaluating training programs in terms of payback periods and long-run accrued benefits. Here, payback period is defined as that time required for the graduate to produce enough extra (above and beyond what he would be expected to produce without training) to equal the cost of his training plus the foregone productivity related to his time in training. Long-run accrued benefits is defined as the difference between what the graduate is expected to produce and what he would have been expected to produce without training. (See De Vore, Volume II)

7. Potential Student Module

This module provides techniques for projecting the number of persons who are potential vocational or technical students by county within the state. The number of disadvantaged and handicapped by county are also estimated. The U.S. Census Report plus the state School Statistical Report are used as input into this system.

8. Student Interest Module

This module provides a way to rank various program clusters by student interest. In this context, student interest is measured by the number of K-VIEW references per occupational cluster. (Note: K-VIEW is a student information system through which students can obtain information about specific occupations at their convenience.) Program clusters with a high number of K-VIEW references are said to rank high in student interest while a low number of references is said to indicate a low student interest rank. (See Price, Volume II)

9. Facility Usage Module

This module is a technique for evaluating the use of facilities in terms of number of students served per square foot, work station, etc. The module provides an interesting insight into how, when and to what extent various facilities are utilized. (See Downs, Volume II)

10. Handicapped and Disadvantaged Module

This module is a software package which can be used with the Student File generated by the Student Accounting System Module to produce an analysis of the participation rates of disadvantaged and handicapped students by "program type", school, and individual program. This type of data is used in the OE 3138 and OE 3139 Reports and in the Budgeting Module. (See Jones, Volume II)

11. Interfacing Module

This module is the technique used to match manpower demand data and manpower supply data. Occupations and training programs are not always an obvious match. Using course descriptions and the expert opinions of State Supervisors, a system of grouping occupations with related training programs has been developed for Kansas.

12. Interstate Coordination Module

This module is a technique for combining data from adjacent states with Kansas data to be used by vocational education planners who organize training which serves two or more states. The principal use for this module in Kansas is in the Kansas City, Kansas - Kansas City, Missouri area. (See Norheim, Volume II).

13. The Optimum Program Mix Module

The development of a model that can be used to determine the optimum program mix in a given geographical area involves identifying variables that tend to determine or restrict the program mix. A structured manipulation of these variables should yield the optimum program mix relative to some predetermined goal, e.g., maximization of students placed.

Variables that were identified for manipulation within the model are (1) cost per program, (2) total available vocational and technical education financial resources, (3) number of students interested in particular programs, (4) number of programs of certain types needed to meet manpower needs, (5) number of students a particular program can serve, (6) student population to be served, and (7) the number of students expected to be placed into employment (for which they were trained and by program type).

Several approaches were considered in the model development and linear programming was selected as the most feasible alternative. Linear programming concerns itself with the efficient use or allocation of limited resources to meet desired objectives where solutions satisfy both the conditions of the problem (constraints) and the given objective in terms of the most optimum solution.

The objective to be optimized can be any one of several variables. Possibly some of the more feasible objectives would be to maximize the number of students placed in occupations related to their training, the number of disadvantaged and handicapped students being served or societal cost-benefit ratios. (See Brooks, Volume II)

14. Program Application Evaluation Module

This system is designed to evaluate program applications on the basis of up to nineteen criteria determined by state supervisors. (Note: Program applications are submitted annually for both new and established programs). Since all criteria are not of equal significance, each criterion is weighted. Weights have been established by a representative panel of administrators.

There are two types of data used as input in this system, i.e., weights for criteria and criteria values for each program. Each criterion is assigned a weight and criterion values relative to each program are calculated. The following formula is used to derive a program rating for each program application form.

$$\text{Program Rating}_i = W_1 X_{1,i} + W_2 X_{2,i} + W_3 X_{3,i} + \dots + W_{19} X_{19,i}$$

In this formula, Program Rating$_i$ refers to the rating of a particular program (i), W_j refers to the weight of criterion (j) and $X_{j,i}$ refers to the value of criterion (j) for program (i).

Reports produced are:

1. A rank ordering of all established program applications by program rating,
2. A rank ordering of all new program applications by program rating,
3. A rank ordering of established program applications by program rating within program type,
4. A rank ordering of new program applications by program rating within program type, and
5. Analysis of each program application relative to other programs, one copy of which is returned to the applying school.

15. Budgeting Module

This system is directly tied to the Program Application Evaluation Module and is based on the philosophy that if a program is worth approving, then it is worth funding at an operational level. The base allotment (operating budget) is composed of two types of funds, i.e., local money available to finance the program and state and federal money needed to bring the funds available up to the operating level. An operating budget is determined and the local money available is compared to this figure. If additional money is needed to bring the available funding to the operating level, then state and federal money is added as needed. When an institution is making less than a maximum effort to fund the program with local funds, the state makes less than a maximum effort to provide the additional funds needed for the operating level. This reduction in state effort is directly proportional to the reduction of local effort. Another type of money used to finance the programs above the operating level is incentive money which is distributed on the basis of program application evaluation with higher evaluation rating programs receiving more money. The incentive monies never constitute more than five percent of the total budget. Disadvantaged and handicapped funds are determined on the basis of number of disadvantaged and handicapped students enrolled at a certain number of dollars per student. These monies are not part of the operating budget or incentive funds and can be claimed only upon proof of additional costs required to supplement activities, services or materials which will enable disadvantaged or handicapped students to succeed in the program.

16. Data Dissemination Module

This module represents a technique for disseminating information produced by the other modules. Five dissemination procedures are incorporated into a system for getting information to the field and getting feedback from the field for the K-MUST staff.

SYSTEM MODULE INTEGRATION

The system modules described in the preceding section can be integrated to provide a comprehensive management information-decision making system. Integration, in this case, means that the modules are data linked so that output from one module serves as input for higher level modules. There are three levels of modules in the total system. The first level is basic data generating modules which collect, process and analyze raw data. The second level is secondary data generating modules which further analyze data produced by one or more first level modules. The third level is data using modules where inputs from other modules are used to produce a decision based on flexible criteria or criterion weights.

Figure 1 depicts the integration relationships among modules in the K-MUST System. Manpower supply data from both public and non-public sources (modules 1 and 2) is combined with manpower demand data (module 3) in the interfacing module (12) to estimate net manpower needs. This output plus upgrading training needs (module 5), cost/benefit information (module 6), potential student data (module 7), and student interest data (module 8) are combined to determine the optimum program mix for Kansas or a geographic area in Kansas (module 13). It should be noted that the program mix can be optimized relative to a number of variables, foremost of which are graduate placement and program cost/benefit ratios. The optimum program mix data is combined with facility usage data (module 9), and input from adjacent states (module 11) to evaluate established and proposed program applications (module 14). This output in conjunction with handicapped and disadvantaged enrollment data (module 10) is used for the development of program budgets (module 15). Handicapped and disadvantaged enrollment data was derived from the public school student accounting module (1). Information to facilitate the placement of graduates (module 4) is obtained from demand data (module 3). Dissemination and feedback is achieved in module 16.

It should be noted that since many of the modules are stand-alone systems, the data linkages presented here are not necessarily fixed. Additionally, many other data needs can be satisfied through indirect software links with the data bank.

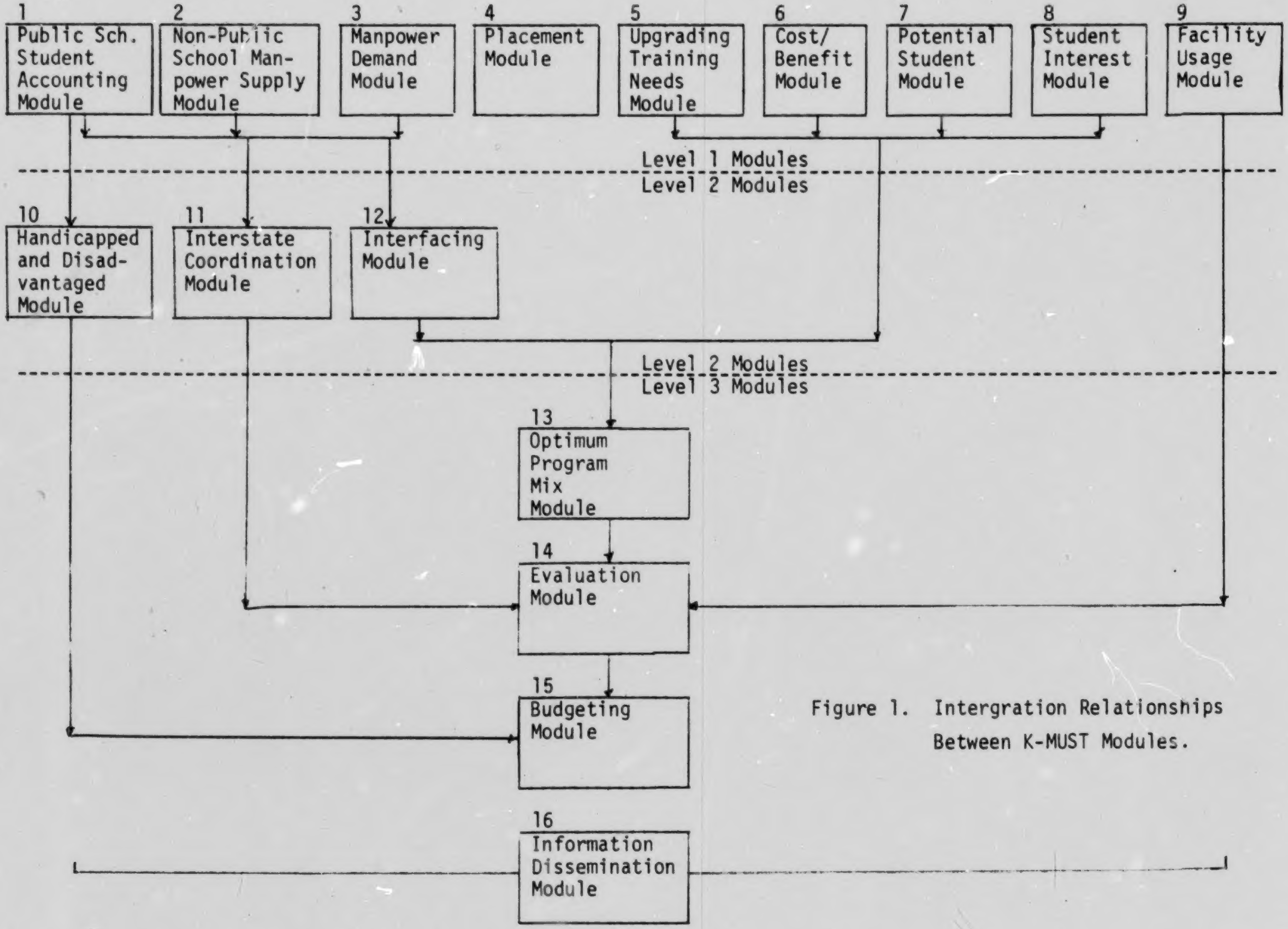

Figure 1. Intergration Relationships Between K-MUST Modules.

TIME PARAMETERS

Because of cost factors, it is not feasible for all modules to cycle on an annual basis. The Public School Student Accounting System (1), the Manpower Demand Module (3), the Placement Module (4), the Handicapped and Disadvantaged Module (10), the Interfacing Module (12), the Optimum Program Mix Module (13), the Evaluation Module (14), the Budgeting Module (15) and the Information Dissemination Module (16) are cycled annually. The Non-Public School Supply Module (2), the Upgrading Training Needs Module (5), the Potential Student Module (7) and the Student Interest Module (8) are cycled every two years. The Cost/Benefit Module (6), the Facility Usage Module (9), and the Interstate Coordination Module (11) are cycled every three years. When data from a module that is not cycling in a given year is needed in a module which is cycling, the latest data available is used. Figure 2 presents a graphic representation of the time frame for this system.

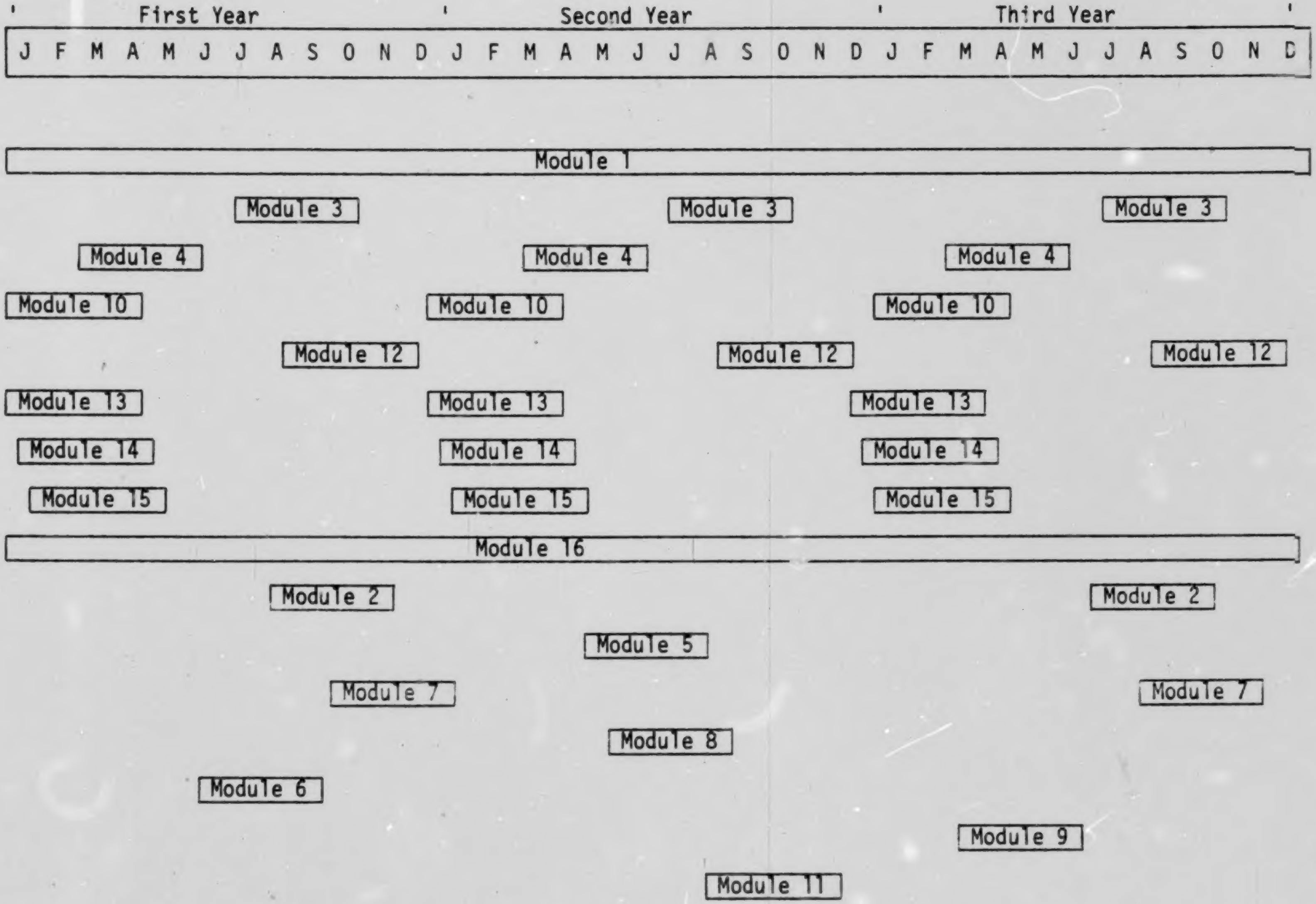

Figure 2: Time Frame for the K-MUST System

Chapter 2

STUDENT ACCOUNTING SYSTEM MODULE

BACKGROUND

In the winter of 1971-72, the Division of Vocational Education of the Kansas State Department of Education identified a need for a new automated method of gathering and processing data on all students enrolled in vocational or technical education across the state. The task of developing this system was assigned to the K-MUST staff.

The goal of the system was to gather enrollment, completion and follow-up data on each vocational or technical student in the state. The purpose of this chapter is to describe the module designed to meet this goal.

GENERAL MODULE DESCRIPTION

The system can logically be segmented into nineteen operational steps (see Figure 3). These operational steps are briefly explained below.

The first step in the system is to familiarize teachers with the system through inservice training. A handbook was developed and given to teachers in a series of training sessions. This handbook contains all codes and definitions necessary to complete systems source documents (see Appendix).

The second step in the system is to disseminate enrollment forms to the teachers. At the annual summer conference, vocational teachers receive enrollment forms for each student in their vocational or technical programs. The enrollment form is in an optical scan format and gathers student characteristics data needed for decision making relative to vocational and technical program offerings. Figure 4 is a pictorial representation of the form.

In September, teachers assist their students in completing the optical scan form. This action constitutes step three in the system.

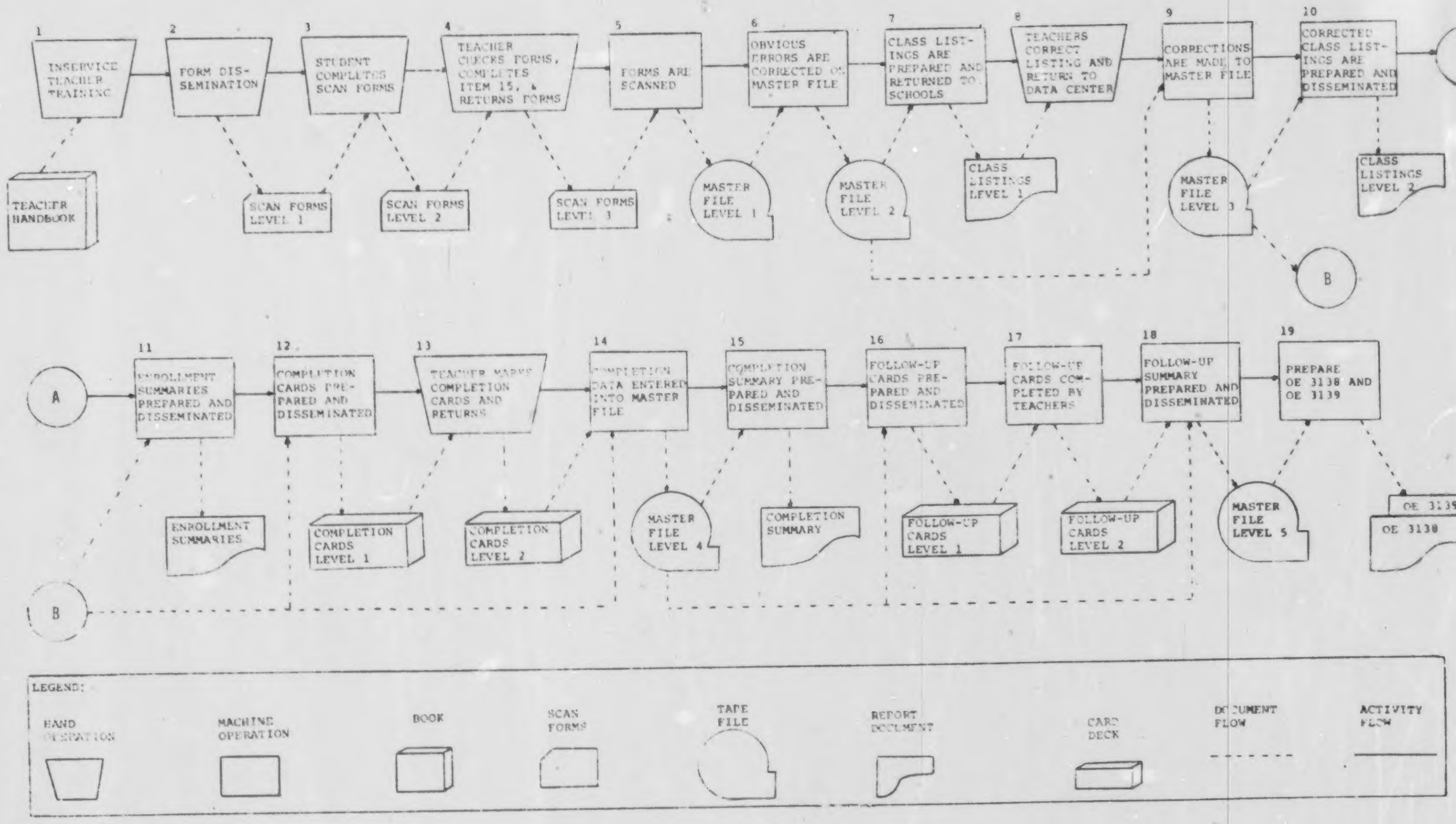
1
INSERVICE TEACHER TRAINING
TEACHER HANDBOOK
2
FORM DISSEMINATION
3
STUDENT COMPLETES SCAN FORMS
SCAN FORMS LEVEL 1
4
TEACHER CHECKS FORMS, COMPLETES ITEM 15, & RETURNS FORMS
SCAN FORMS LEVEL 2
5
FORMS ARE SCANNED
SCAN FORMS LEVEL 3
6
OBVIOUS ERRORS ARE CORRECTED ON MASTER FILE
MASTER FILE LEVEL 1
7
CLASS LISTINGS ARE PREPARED AND RETURNED TO SCHOOLS
MASTER FILE LEVEL 2
8
TEACHERS CORRECT LISTING AND RETURN TO DATA CENTER
CLASS LISTINGS LEVEL 1
9
CORRECTIONS ARE MADE TO MASTER FILE
MASTER FILE LEVEL 3
10
CORRECTED CLASS LISTINGS ARE PREPARED AND DISSEMINATED
CLASS LISTINGS LEVEL 2
A
B
A
11
ENROLLMENT SUMMARIES PREPARED AND DISSEMINATED
ENROLLMENT SUMMARIES
12
COMPLETION CARDS PREPARED AND DISSEMINATED
COMPLETION CARDS LEVEL 1
13
TEACHER MARKS COMPLETION CARDS AND RETURNS
COMPLETION CARDS LEVEL 2
14
COMPLETION DATA ENTERED INTO MASTER FILE
MASTER FILE LEVEL 4
15
COMPLETION SUMMARY PREPARED AND DISSEMINATED
COMPLETION SUMMARY
16
FOLLOW-UP CARDS PREPARED AND DISSEMINATED
FOLLOW-UP CARDS LEVEL 1
17
FOLLOW-UP CARDS COMPLETED BY TEACHERS
FOLLOW-UP CARDS LEVEL 2
18
FOLLOW-UP SUMMARY PREPARED AND DISSEMINATED
MASTER FILE LEVEL 5
19
PREPARE OE 3138 AND OE 3139
OE 3139
OE 3138
B
LEGEND:
HAND OPERATION
MACHINE OPERATION
BOOK
SCAN FORMS
TAPE FILE
REPORT DOCUMENT
CARD DECK
DOCUMENT FLOW
ACTIVITY FLOW

Figure 3:
Student Accounting System Flow Chart

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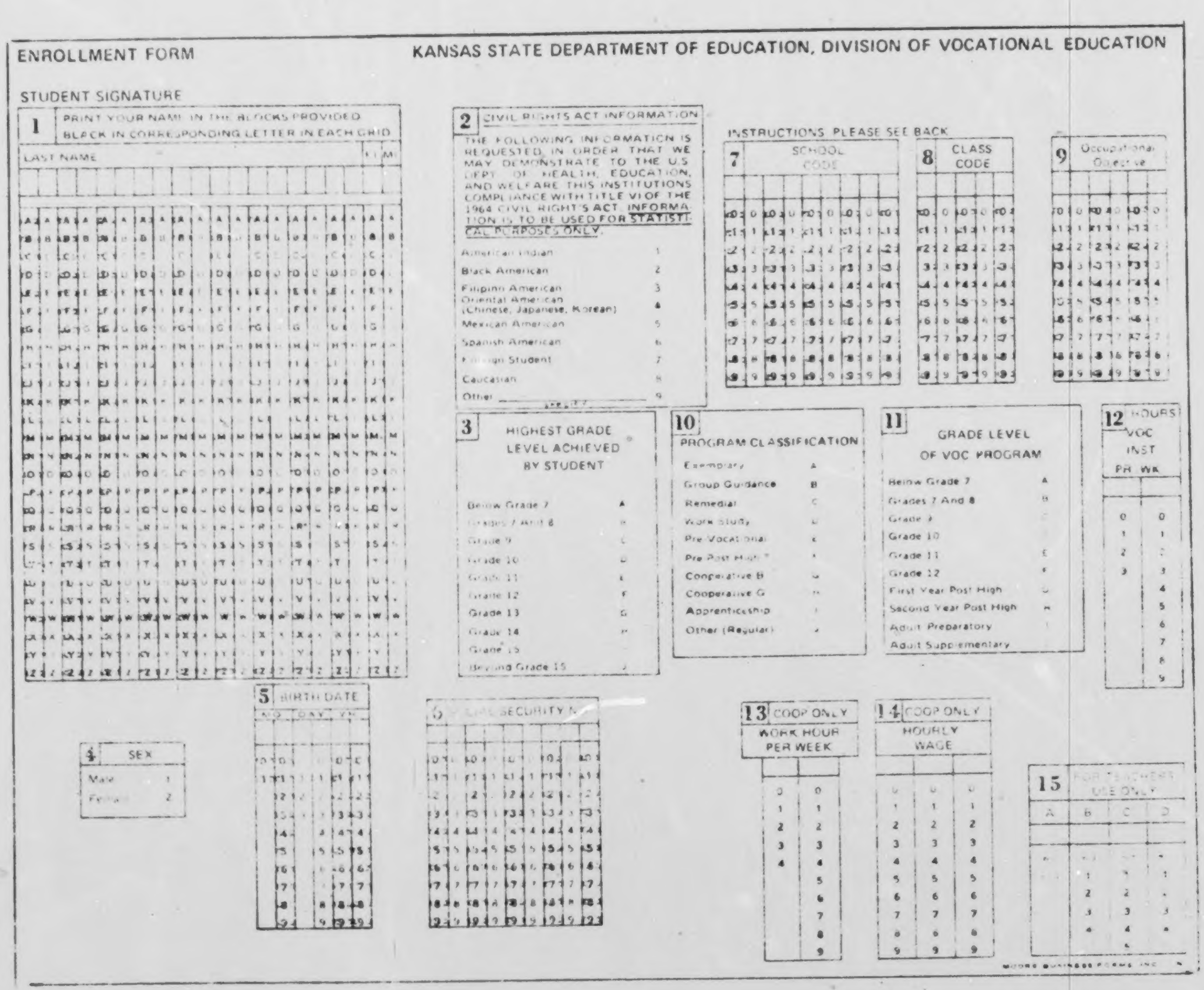

ENROLLMENT FORM

KANSAS STATE DEPARTMENT OF EDUCATION, DIVISION OF VOCATIONAL EDUCATION

STUDENT SIGNATURE

1 PRINT YOUR NAME IN THE BLOCKS PROVIDED BLACK IN CORRESPONDING LETTER IN EACH GRID

LAST NAME F.I. M.I.

2 CIVIL RIGHTS ACT INFORMATION

THE FOLLOWING INFORMATION IS REQUESTED IN ORDER THAT WE MAY DEMONSTRATE TO THE U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE THIS INSTITUTIONS COMPLIANCE WITH TITLE VI OF THE 1964 CIVIL RIGHT'S ACT. INFORMATION IS TO BE USED FOR STATISTICAL PURPOSES ONLY.

American Indian	1
Black American	2
Filipino American	3
Oriental American (Chinese, Japanese, Korean)	4
Mexican American	5
Spanish American	6
Foreign Student	7
Caucasian	8
Other ______	9

3 HIGHEST GRADE LEVEL ACHIEVED BY STUDENT

Below Grade 7	A
Grades 7 And 8	B
Grade 9	C
Grade 10	D
Grade 11	E
Grade 12	F
Grade 13	G
Grade 14	H
Grade 15	I
Beyond Grade 15	J

4 SEX

Male	1
Female	2

5 BIRTH DATE

MO. DAY YR.

6 SOCIAL SECURITY NO.

INSTRUCTIONS PLEASE SEE BACK

7 SCHOOL CODE

8 CLASS CODE

9 Occupational Objective

10 PROGRAM CLASSIFICATION

Exemplary	A
Group Guidance	B
Remedial	C
Work Study	D
Pre-Vocational	E
Pre Post High	F
Cooperative B	G
Cooperative G	H
Apprenticeship	I
Other (Regular)	J

11 GRADE LEVEL OF VOC PROGRAM

Below Grade 7	A
Grades 7 And 8	B
Grade 9	C
Grade 10	D
Grade 11	E
Grade 12	F
First Year Post High	G
Second Year Post High	H
Adult Preparatory	I
Adult Supplementary	J

12 HOURS VOC INST PR WK

13 COOP ONLY WORK HOUR PER WEEK

14 COOP ONLY HOURLY WAGE

15 FOR TEACHERS USE ONLY

A B C D

MOORE BUSINESS FORMS, INC.

Figure 4: Optical Scan Enrollment Form

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The fourth step is for the teacher to answer the questions in section 15 on the form for each of his students. This section refers to disadvantaged and handicapped students. (Note: The student identifies himself as to ethnic group in section 2 on the form.)

The fifth step is to send the forms to Kansas State Teacher's College at Emporia where the data is transferred from the scan sheets to computer tape by an IBM Opscan 100 DM. This scanner is of the new double density generation and can process over 600 forms a minute.

Step six is a hand operation in which the K-MUST staff visually inspects an output listing of the source data and inputs corrections for the master tape. The output listing has flags associated with computer detected errors in the source data.

Once the obvious errors in the master file have been corrected, class listings are prepared and sent to teachers. This constitutes step seven of the system.

Step eight requires the teachers to examine the class listing and pencil in necessary changes. The corrected listings are returned to the K-MUST Project staff.

In step nine of the system, the K-MUST staff enters the corrections from the listings onto the master tape.

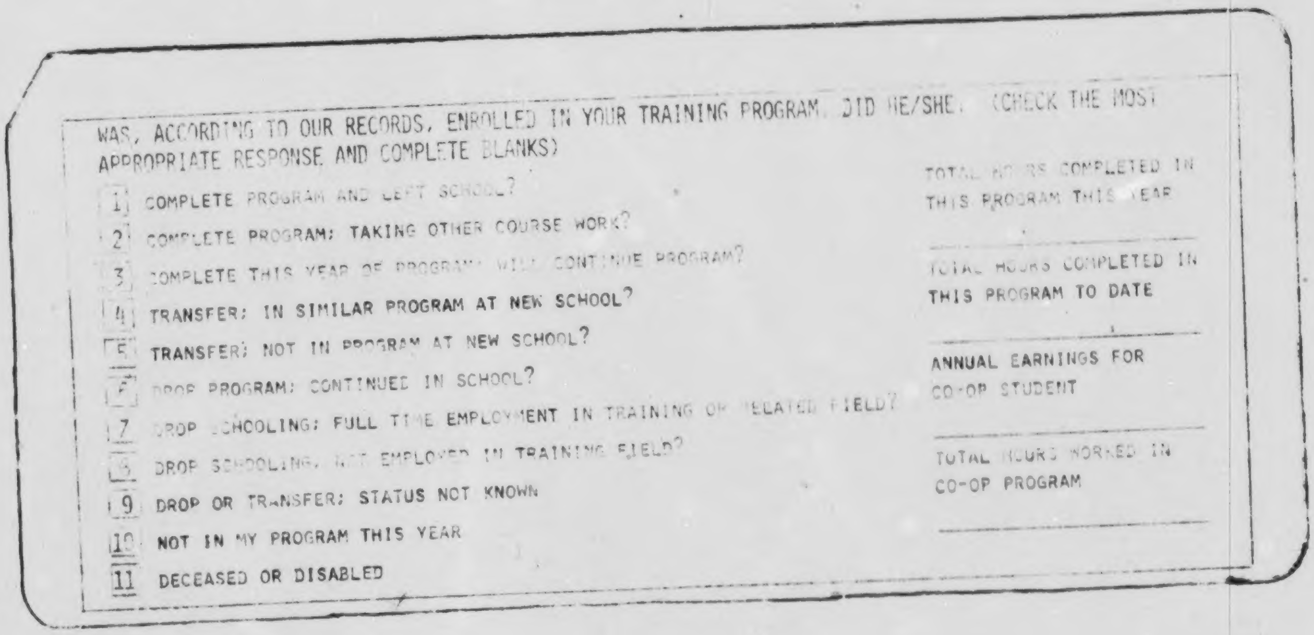
In step ten, corrected class listings are prepared and disseminated to the schools. This serves as an official class roster.

An enrollment summary of all programs is prepared for state supervisors in step eleven. This enrollment summary may be prepared in six different ways, i.e., by school by program; by school by occupational objective; by occupational objective by school; by occupational objective by program; by program by school and by program by occupational objective.

In step twelve, completion cards are prepared and distributed. Figure 5 is a pictorial representation of a completion card.

In step thirteen, the teacher marks a completion card for each student in his class. The teacher marks the card by selecting one of ten options which best describes the status of the student relative to the program.

The completion card data is entered into the master file in step fourteen. Prior to entry, the completion cards are hand sorted into groups depending on response and a lead card for each group prefaces that group as an identifier.



WAS, ACCORDING TO OUR RECORDS, ENROLLED IN YOUR TRAINING PROGRAM. DID HE/SHE: (CHECK THE MOST APPROPRIATE RESPONSE AND COMPLETE BLANKS)

1 COMPLETE PROGRAM AND LEFT SCHOOL?
2 COMPLETE PROGRAM; TAKING OTHER COURSE WORK?
3 COMPLETE THIS YEAR OF PROGRAM; WILL CONTINUE PROGRAM?
4 TRANSFER; IN SIMILAR PROGRAM AT NEW SCHOOL?
5 TRANSFER; NOT IN PROGRAM AT NEW SCHOOL?
6 DROP PROGRAM; CONTINUED IN SCHOOL?
7 DROP SCHOOLING; FULL TIME EMPLOYMENT IN TRAINING OR RELATED FIELD?
8 DROP SCHOOLING, NOT EMPLOYED IN TRAINING FIELD?
9 DROP OR TRANSFER; STATUS NOT KNOWN
10 NOT IN MY PROGRAM THIS YEAR
11 DECEASED OR DISABLED

TOTAL HOURS COMPLETED IN THIS PROGRAM THIS YEAR ____

TOTAL HOURS COMPLETED IN THIS PROGRAM TO DATE ____

ANNUAL EARNINGS FOR CO-OP STUDENT ____

TOTAL HOURS WORKED IN CO-OP PROGRAM ____

Figure 5: Completion Card

In step fifteen, completion summary reports are prepared and disseminated. These summary reports can be of six types as were the enrollment reports described in step eleven.

In step sixteen, follow-up cards are prepared and disseminated. Figure 6 is a pictorial representation of a follow-up card. As with the completion card, the student name, program name, school name and student identification number are prepunched into the card from the master tape.

Step seventeen requires the teachers to complete a follow-up card only for those completed or marketable skilled students and return the cards to the K-MUST staff. There are twenty possible responses on the follow-up card and the teacher must select that response or series of responses which best represent the status of the student.

In step eighteen, a follow-up summary is prepared and disseminated. Again, this summary can be of six types similar to those available in enrollment and completion reports.

In the final step, federal reports are prepared from the data on the master tape. There are two principle federal reports, i.e., OE 3138 which is an enrollment report and OE 3139 which is a completion and follow-up report.

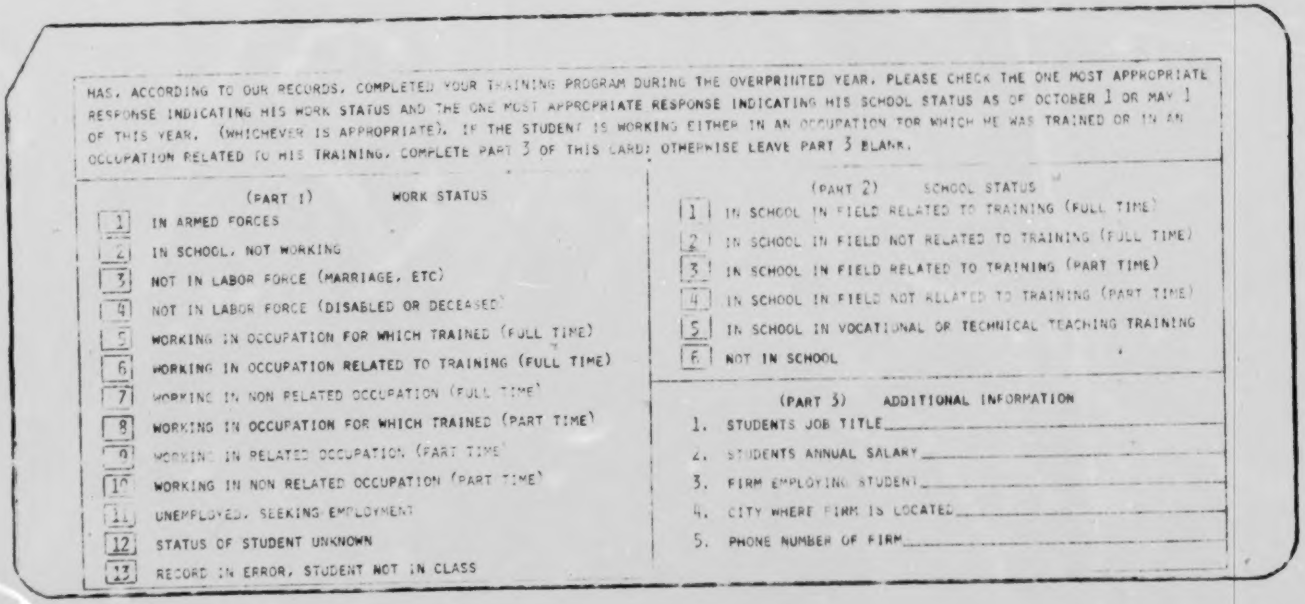
INTRODUCTION TO SOFTWARE PACKAGE

The software package described in this chapter has been designed to create, maintain and report demographic information related to students enrolled in vocational education programs within the state of Kansas.

Information about each student is collected annually as he enters a vocational education program. The medium used for this data collection process is a student enrollment form which, when marked with pencil, can be machine read optically.

The following is a list of the information maintained for each student:

1. Personal statistics
    a. Name
    b. Social security number
    c. Sex
    d. Race



HAS, ACCORDING TO OUR RECORDS, COMPLETED YOUR TRAINING PROGRAM DURING THE OVERPRINTED YEAR. PLEASE CHECK THE ONE MOST APPROPRIATE RESPONSE INDICATING HIS WORK STATUS AND THE ONE MOST APPROPRIATE RESPONSE INDICATING HIS SCHOOL STATUS AS OF OCTOBER 1 OR MAY 1 OF THIS YEAR. (WHICHEVER IS APPROPRIATE). IF THE STUDENT IS WORKING EITHER IN AN OCCUPATION FOR WHICH HE WAS TRAINED OR IN AN OCCUPATION RELATED TO HIS TRAINING, COMPLETE PART 3 OF THIS CARD; OTHERWISE LEAVE PART 3 BLANK.

(PART 1) WORK STATUS

- 1 IN ARMED FORCES
- 2 IN SCHOOL, NOT WORKING
- 3 NOT IN LABOR FORCE (MARRIAGE, ETC)
- 4 NOT IN LABOR FORCE (DISABLED OR DECEASED)
- 5 WORKING IN OCCUPATION FOR WHICH TRAINED (FULL TIME)
- 6 WORKING IN OCCUPATION RELATED TO TRAINING (FULL TIME)
- 7 WORKING IN NON RELATED OCCUPATION (FULL TIME)
- 8 WORKING IN OCCUPATION FOR WHICH TRAINED (PART TIME)
- 9 WORKING IN RELATED OCCUPATION (PART TIME)
- 10 WORKING IN NON RELATED OCCUPATION (PART TIME)
- 11 UNEMPLOYED, SEEKING EMPLOYMENT
- 12 STATUS OF STUDENT UNKNOWN
- 13 RECORD IN ERROR, STUDENT NOT IN CLASS

(PART 2) SCHOOL STATUS

- 1 IN SCHOOL IN FIELD RELATED TO TRAINING (FULL TIME)
- 2 IN SCHOOL IN FIELD NOT RELATED TO TRAINING (FULL TIME)
- 3 IN SCHOOL IN FIELD RELATED TO TRAINING (PART TIME)
- 4 IN SCHOOL IN FIELD NOT RELATED TO TRAINING (PART TIME)
- 5 IN SCHOOL IN VOCATIONAL OR TECHNICAL TEACHING TRAINING
- 6 NOT IN SCHOOL

(PART 3) ADDITIONAL INFORMATION

1. STUDENTS JOB TITLE__________
2. STUDENTS ANNUAL SALARY__________
3. FIRM EMPLOYING STUDENT__________
4. CITY WHERE FIRM IS LOCATED__________
5. PHONE NUMBER OF FIRM__________

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Figure 6: Follow-Up Card

   e. Birth date
   f. Highest grade level
   g. Occupational objective code and title
   h. Handicaps and disadvantages
2. Program information
   a. School code and name
   b. Class code and title
   c. Grade level
   d. Classification
   e. Hours of instruction per week
   f. Cooperative hourly wage and hours per week
3. Completion and follow-up information

Instructors are given Teacher's Guides with the Enrollment Forms. The instructor aids the students in completing the forms and returns them to the address given in the guide. The Enrollment Forms are collected together and scanned by the OpScan device. A program checks the data for correctness and prints a complete listing of good and bad records. A tape of good records is produced at this time. The original forms that were in error may be corrected and reprocessed or enrollment cards may be punched. Several groups of good records resulting from the initial data processing program may be batched onto one tape.

Good records contained on the tape are then merged onto the Master File. The program that does this allows deletion of new and old records and processing of completion and follow-up information. Class listings are automatically produced for classes with new or changed records.

The system is capable of producing several reports using the entire master file or a subset of the master file. The subset is based upon (1) all or one class, or (2) all, one, or a range of schools. The reports that may be generated include:

1. All information required to complete the Federal Reports 3138 and 3139 is generated. These include summary totals of enrollment and completion information totaled by occupational objective groups.

2. A detailed listing by class within school of all students may be obtained.

3. A summary report on enrollment, completion, or follow-up information (or any two, or all three) may be selected for: class within school,

occupational objective within school, school within class, school within occupational objective, or class within occupational objective.

Most completion and follow-up cards are produced upon administrator request. Because adult classes have a tendency to be of short duration, the completion and initial placement cards are generated at the time that their initial record is added to the master file.

The files have been carefully structured to allow convenient access by specially created programs so that additional reports may be obtained as required.

The computer programming language used to write the system was USASI COBOL. The programs have been run on an IBM S360/50 computer system with OS-MFT as the operating system. The package consists of eight programs described in the "PROGRAMS" section of this chapter. The files these programs access are described in the "FILES" section of this chapter.

REPORTS

There are several reports generated by the system, some automatically, others upon request. The major reports are described in this section. The other reports and summary information produced by each program are described in the "PROGRAM" section of this chapter.

Enrollment Form Error Report

1. Purpose and Scope:

The "Enrollment Form Error Report" is generated by the initial data transformation program TRANS. Its purpose is to report errors, warnings and assumed values to the processing group. This report is not to be sent to the originating school. It is produced so that the processing group can monitor the degree of correctness of the original data and so that they may do some error correcting before updating the master file.

2. Special Features
   a. Items that are incorrect and fall into the following categories are deemed severe errors and are underlined with asterisks:
      1) Last name missing.
      2) Invalid school code.

3) Invalid class code.
4) Invalid occupational objective.
5) Missing grade level of vocation program.

b. Items that are considered incorrect and fall into the following categories are deemed warnings and are underlined with dashes (except as indicated):
   1) Civil Rights information missing.
   2) Highest grade level achieved by student missing.
   3) Sex missing.
   4) Birth date missing or non-numeric. Because many errors are caused by leaving the first digit blank in place of zero, zero is assumed if that is the only error. In this case the assumed value is printed instead of dashes.
   5) The school code is not the same as either the preceding or following records (this helps spot incorrect school numbers which happen to be valid school numbers).
   6) The class code is not the same as either the preceding or following records (this helps spot incorrect class numbers which happen to be valid class numbers).
   7) Program classification is missing.
   8) Hours of Vocational Instruction are not numeric.
   9) Program classification requires that work hours be numeric.
   10) Program classification requires that hourly wage be numeric.
   11) Any of the problem areas (block 15) were left blank.

c. The message "---WARNING---" is written beside the record if any warnings are found unless a severe error is found in which case '***SEVERE ERROR***' is written beside the record. In either case a blank line is left between the line designating the erroneous elements and the next line.

d. If the social security number has been left blank a unique number beginning with '99' will be substituted into the record.

3. Coded information

To decode information on the error report use an enrollment form. Each block has a direct correspondence between the report and enrollment form except that "0" is used for "no" and "1" for "yes".

4. Figure 7 is a sample page from an Enrollment Form Error Report.

Update Detail Listing by School and Class

1. Purpose and Scope:

The "Detail Listing by School and Class" is generated by the master file update program, UPDATE. Its purpose is to generate complete class listings (double spaced) for classes that have new students or replacements. Two copies are to be sent to the instructors so they can indicate corrections on one copy and send it back, if necessary. Additional copies may be filed with appropriate state offices.

2. Special features
   a. Items that are not reasonable are left blank.
   b. Only classes that have a new or changed record are listed. Even if all the new or changed records for a class are also deleted, the class is listed.
3. Coded information:

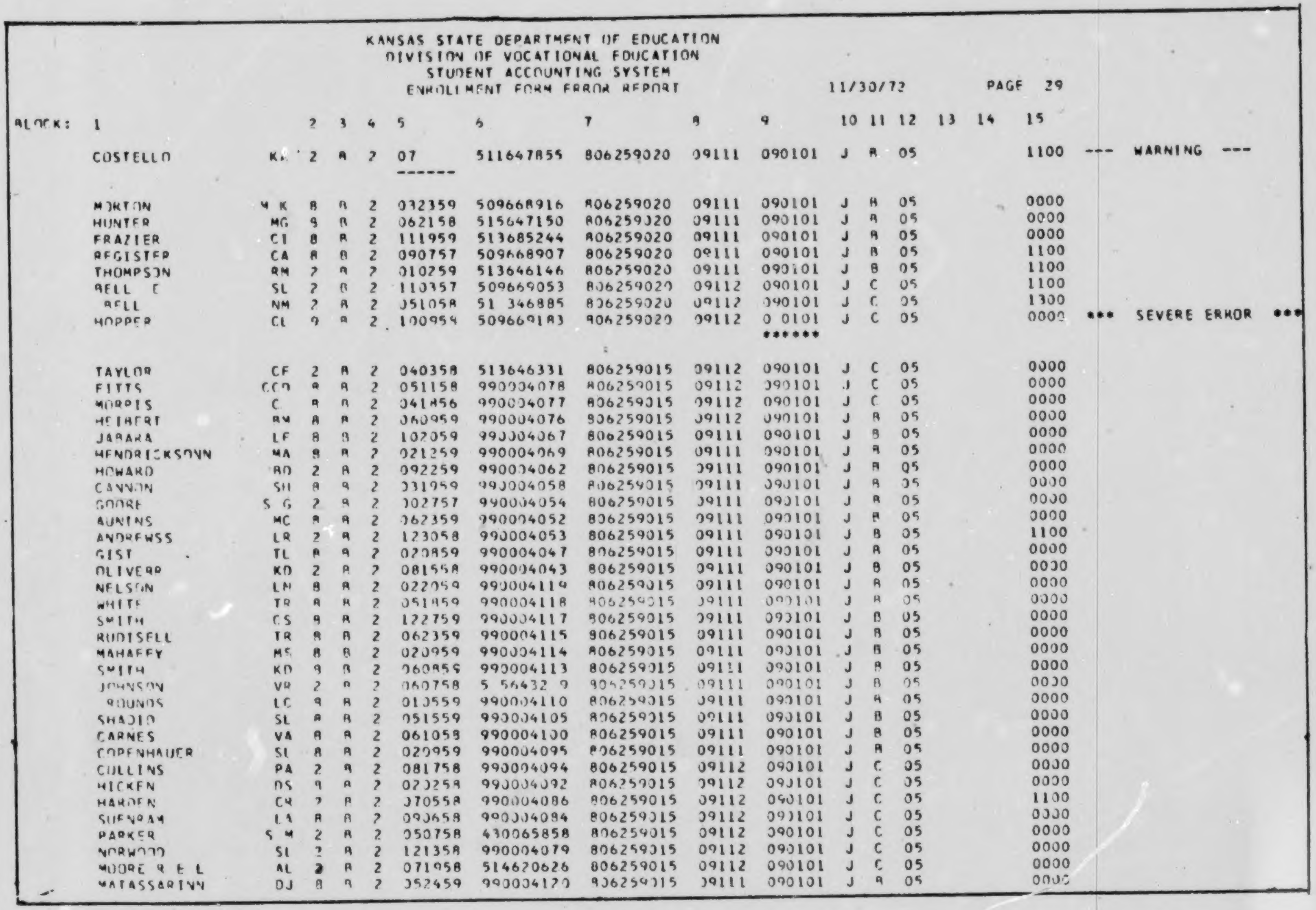
The report has certain information and column titles that might not be entirely obvious. Table 1 describes column titles used in this report. Figure 8 is a sample page of the Updated Detail Listing Report.

Selective Detail Listing by School and Class

1. Purpose and Scope:

The "Detail Listing by School and Class" including completion and follow-up information data is generated by the student listing program, LISTSTU. Its purpose is to generate complete class listings with detailed information. This report differs from Update Detail Listing in that it is single spaced and contains completion and follow-up information. Normally these are for permanent filing.

2. Special Features:
   a. Items that are not reasonable are left blank.
   b. The period for the latest information concerning Placement/Follow-Up is indicated by the column marked REPORT PERIOD.
   c. The subset selection program (see Program SUBSET) may be used to select the desired classes and schools.



```
                                    KANSAS STATE DEPARTMENT OF EDUCATION
                                     DIVISION OF VOCATIONAL EDUCATION
                                       STUDENT ACCOUNTING SYSTEM
                                      ENROLLMENT FORM ERROR REPORT              11/30/72        PAGE  29

BLOCK:  1                  2  3  4  5       6          7          8      9       10 11 12  13  14   15

        COSTELLO        KA 2  R  2  07      511647855  806259020  09111  090101  J  R  05            1100  ---  WARNING  ---
                                    ------

        MORTON          MK 8  R  2  032359  509668916  806259020  09111  090101  J  B  05            0000
        HUNTER          MG 9  R  2  062158  515647150  806259020  09111  090101  J  R  05            0000
        FRAZIER         CI 8  R  2  111959  513685244  806259020  09111  090101  J  R  05            0000
        REGISTER        CA 8  B  2  090757  509668907  806259020  09111  090101  J  B  05            1100
        THOMPSON        RM 2  R  2  010259  513646146  806259020  09111  090101  J  B  05            1100
        BELL  E         SL 2  B  2  110357  509669053  806259020  09112  090101  J  C  05            1100
         BELL           NM 2  R  2  051058  51 346885  806259020  09112  090101  J  C  05            1300
        HOPPER          CL 9  R  2  100959  509669183  806259020  09112  0 0101  J  C  05            0000  ***  SEVERE ERROR  ***
                                                                         ******

        TAYLOR          CF 2  R  2  040358  513646331  806259015  09112  090101  J  C  05            0000
        FITTS          CCD 9  R  2  051158  990004078  806259015  09112  090101  J  C  05            0000
        MORRIS          C  9  R  2  041856  990004077  806259015  09112  090101  J  C  05            0000
        HEIBERT         RM 8  R  2  060959  990004076  806259015  09112  090101  J  R  05            0000
        JABARA          LF 8  B  2  102059  990004067  806259015  09111  090101  J  B  05            0000
        HENDRICKSONN    MA 8  R  2  021259  990004069  806259015  09111  090101  J  R  05            0000
        HOWARD          RD 2  R  2  092259  990004062  806259015  09111  090101  J  R  Q5            0000
        CANNON          SH 8  R  2  031959  990004058  806259015  09111  090101  J  R  05            0000
        GOORE          S G 2  R  2  102757  990004054  806259015  09111  090101  J  R  05            0000
        AUNINS          MC 9  R  2  062359  990004052  806259015  09111  090101  J  R  05            0000
        ANDREWSS        LR 2  R  2  123058  990004053  806259015  09111  090101  J  B  05            1100
        GIST            TL 8  R  2  020859  990004047  806259015  09111  090101  J  R  05            0000
        OLIVERR         KD 2  R  2  081558  990004043  806259015  09111  090101  J  B  05            0000
        NELSON          LN 8  R  2  022059  990004119  806259015  09111  090101  J  R  05            0000
        WHITE           TR 8  R  2  051859  990004118  806259015  09111  090101  J  R  05            0000
        SMITH           CS 9  R  2  122759  990004117  806259015  09111  090101  J  B  05            0000
        RUDISELL        TR 9  R  2  062359  990004115  806259015  09111  090101  J  R  05            0000
        MAHAFFY         MS 8  B  2  020959  990004114  806259015  09111  090101  J  B  05            0000
        SMITH           KD 9  R  2  060859  990004113  806259015  09111  090101  J  R  05            0000
        JOHNSON         VR 2  R  2  060758  5 56432 9  806259015  09111  090101  J  B  05            0000
         ROUNDS         LC 9  R  2  010559  990004110  806259015  09111  090101  J  R  05            0000
        SHADID          SL 8  R  2  051559  990004105  806259015  09111  090101  J  B  05            0000
        CARNES          VA 8  R  2  061058  990004100  806259015  09111  090101  J  B  05            0000
        COPENHAUER      SL 8  R  2  020959  990004095  806259015  09111  090101  J  R  05            0000
        COLLINS         PA 2  R  2  081758  990004094  806259015  09112  090101  J  C  05            0000
        HICKEN          DS 9  R  2  020258  990004092  806259015  09112  090101  J  C  05            0000
        HARDEN          CR 2  R  2  070558  990004086  806259015  09112  090101  J  C  05            1100
        SUENRAM         LA 8  R  2  090658  990004084  806259015  09112  090101  J  C  05            0000
        PARKER         S M 2  R  2  050758  430065858  806259015  09112  090101  J  C  05            0000
        NORWOOD         SL 2  R  2  121358  990004079  806259015  09112  090101  J  C  05            0000
        MOORE R E L     AL 2  R  2  071958  514620626  806259015  09112  090101  J  C  05            0000
        MATASSARINN     DJ 8  R  2  052459  990004120  806259015  09111  090101  J  R  05            0000
```

Figure 7: Sample Page of Enrollment Error Report

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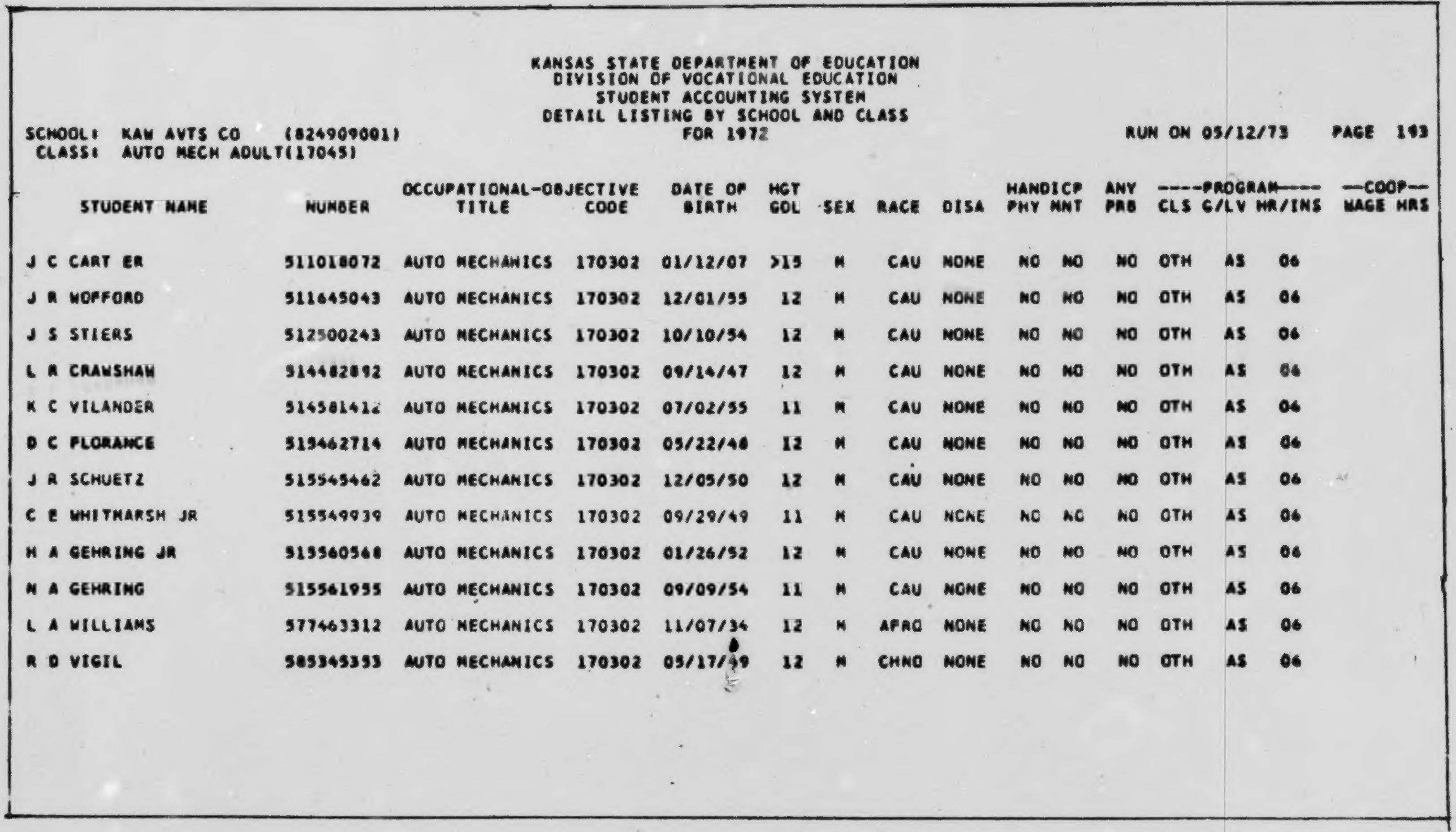


```
                                   KANSAS STATE DEPARTMENT OF EDUCATION
                                    DIVISION OF VOCATIONAL EDUCATION
                                       STUDENT ACCOUNTING SYSTEM
                                   DETAIL LISTING BY SCHOOL AND CLASS
SCHOOL: KAW AVTS CO    (824909001)                FOR 1972                             RUN ON 05/12/73   PAGE  193
 CLASS: AUTO MECH ADULT(17045)

                                  OCCUPATIONAL-OBJECTIVE  DATE OF  HGT                    HANDICP  ANY  ----PROGRAM----  --COOP--
     STUDENT NAME        NUMBER       TITLE        CODE    BIRTH   GDL  SEX  RACE  DISA   PHY MNT  PRB  CLS G/LV HR/INS  WAGE HRS

J C CART ER            511018072  AUTO MECHANICS  170302  01/12/07  >15   M   CAU  NONE   NO  NO   NO  OTH   AS   06
J R WOFFORD            511645043  AUTO MECHANICS  170302  12/01/55   12   M   CAU  NONE   NO  NO   NO  OTH   AS   06
J S STIERS             512500243  AUTO MECHANICS  170302  10/10/54   12   M   CAU  NONE   NO  NO   NO  OTH   AS   06
L R CRAWSHAW           514482892  AUTO MECHANICS  170302  09/14/47   12   M   CAU  NONE   NO  NO   NO  OTH   AS   06
K C VILANDER           514581412  AUTO MECHANICS  170302  07/02/55   11   M   CAU  NONE   NO  NO   NO  OTH   AS   06
D C FLORANCE           515462714  AUTO MECHANICS  170302  05/22/48   12   M   CAU  NONE   NO  NO   NO  OTH   AS   06
J R SCHUETZ            515545462  AUTO MECHANICS  170302  12/05/50   12   M   CAU  NONE   NO  NO   NO  OTH   AS   06
C E WHITMARSH JR       515549939  AUTO MECHANICS  170302  09/29/49   11   M   CAU  NONE   NO  NO   NO  OTH   AS   06
H A GEHRING JR         515560568  AUTO MECHANICS  170302  01/26/52   12   M   CAU  NONE   NO  NO   NO  OTH   AS   06
N A GEHRING            515561955  AUTO MECHANICS  170302  09/09/54   11   M   CAU  NONE   NO  NO   NO  OTH   AS   06
L A WILLIAMS           577463312  AUTO MECHANICS  170302  11/07/34   12   M   AFRO NONE   NO  NO   NO  OTH   AS   06
R D VIGIL              585345353  AUTO MECHANICS  170302  05/17/49   12   M   CHNO NONE   NO  NO   NO  OTH   AS   06
```

Figure 8: Sample Page of Updated Detail Listing Report

Table 1

PRINT-CODE DESCRIPTIONS FOR UPDATE DETAIL LISTING

PRINT-CODE	DESCRIPTION
HGT GDL (Highest grade level achieved by student)	
<7	Below Grade 7
7-8	Grades 7 and 8
9	Grade 9
10	Grade 10
11	Grade 11
12	Grade 12
13	Grade 13
14	Grade 14
15	Grade 15
>15	Beyond Grade 15
SEX	
M	Male
F	Female
RACE (Civil Rights Act Information)	
IND	American Indian
AFRO	Black American
FLIP	Filipino American
ORNT	Oriental American
CHNO	Mexican American
SPAN	Spanish American
FORN	Foreign Student
CAU	Caucasian
OTH	Other
DISA (Disadvantages)	
NONE	None
ECON	Economically Disadvantaged
ACDM	Academically Disadvantaged
BOTH	Both of the above

Table 1 (continued)

PRINT-CODE	DESCRIPTION
DISA (Disadvantages)	
NONE	None
ECON	Economically Disadvantaged
ACDM	Academically Disadvantaged
BOTH	Both of the above
HANDICP PHY (Physical Handicaps)	
NO	None
HH	Hard of Hearing
DF	Deaf
SP	Speech Impaired
V	Vision Impaired (not corr. to 20/20)
CR	Crippled
HANDICP MNT (Mental Handicaps)	
NO	None
TMR	Trainable Mentally Retarded
EMR	Educationally Mentally Retarded
ED	Emotionally Disturbed
LD	Learning Disabilities
MUL	Two or more of the above
ANY PRB (Any Disadvantages or Handicaps)	
NO	None
YES	Disadvantaged or Handicapped
PROGRAM CLS (Classification of Program)	
EXP	Exemplary
GRG	Group Guidance
REM	Remedial
WKS	Work Study
PVC	Pre-Vocational
PPH	Pre-Post high
COB	Cooperative B
COG	Cooperative G

Table 1 (continued)

PRINT-CODE	DESCRIPTION
APR	Apprenticeship
OTH	Other (Regular)
PROGRAM G/LV (Grade level of program)	
<7	Below Grade 7
7-8	Grades 7 and 8
9	Grade 9
10	Grade 10
11	Grade 11
12	Grade 12
FPH	First Year Post High
SPH	Second Year Post High
AP	Adult Preparatory
AS	Adult Supplementary

3. Coded Information:

The report has certain information and column titles that might not be entirely obvious. Table 2 describes report titles not listed in Table 1. Figure 9 is a sample page of the Selective Detail Listing.

Federal Report Forms 3138 and 3139

1. Purpose and Scope:

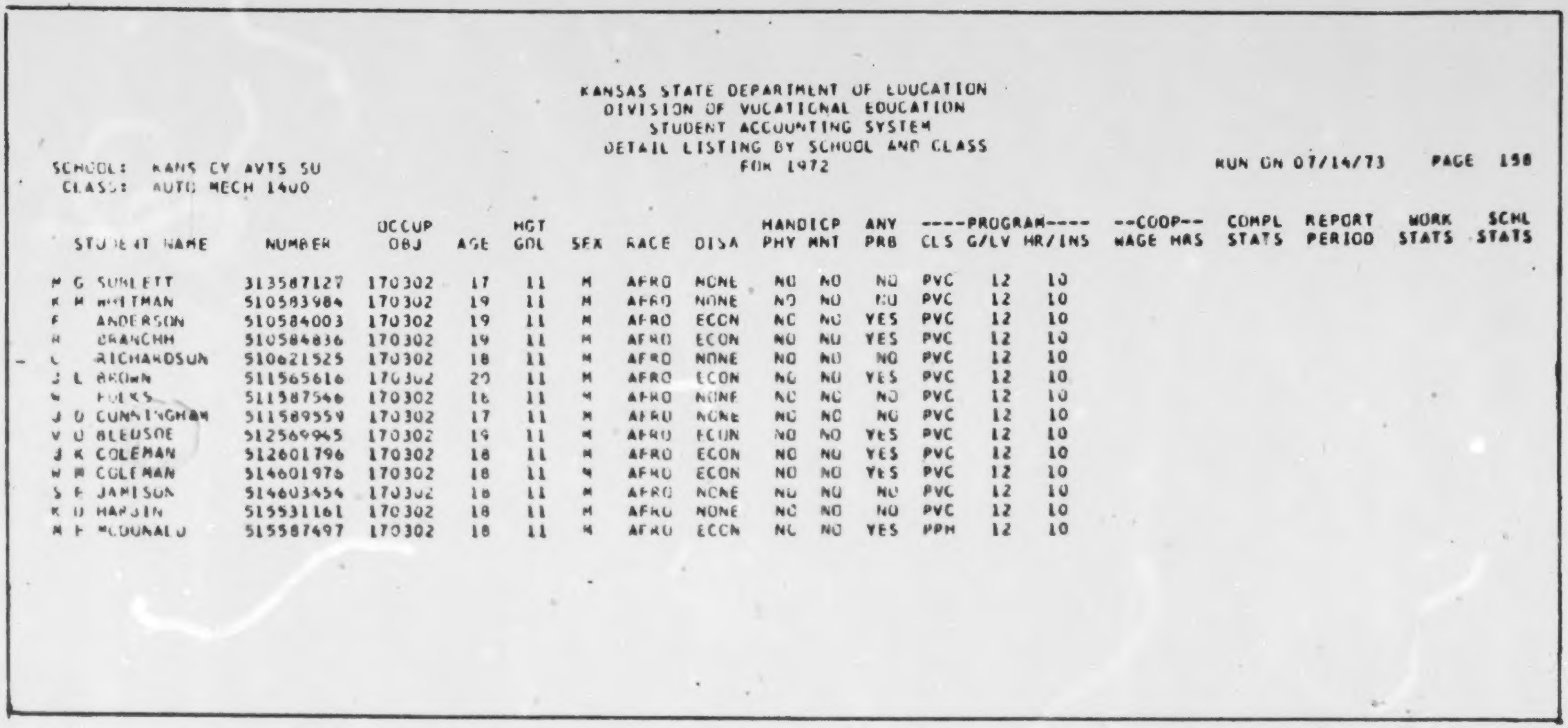
These reports provide the information necessary to complete the required annual federal report forms 3138 and 3139. They can also be used as a form of data summary to send to individual schools and state offices. They are generated by the program FEDERAL. The program summarizes initial enrollment data (Form 3138) and completion and initial placement information (Form 3139) for individuals within each occupation and occupation group.

2. Special Features:
   - a. Only those occupation codes having students classified in them will be printed.
   - b. Only those Home Economics occupational codes considered gainful (09.0201 - 09.0299) are reported.
   - c. The subset selection program (see Program SUBSET) may be used to select the desired classes and schools included in the summary.

3. Coded Information:

The reports have column titles that might not be entirely obvious.

- a. Titles on 3138: The titles are fairly clear except that:
  - 1) All reference to grade levels are in conjunction with Voc Tech Program grade levels not the grade level of the student.
  - 2) Preparatory, supplemental, and apprenticeship all refer to adult. If an adult is preparatory or supplemental and the program is classified as apprenticeship he is tallied as apprenticeship and not preparatory or supplemental. Students in non-adult programs classified apprenticeship are counted in with their grade not as apprenticeship.
  - 3) Entries in 'PART B' and 'PART G' columns are cumulated directly from block 10 of the enrollment form, entries 7 and 8.



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                                          KANSAS STATE DEPARTMENT OF EDUCATION
                                           DIVISION OF VOCATIONAL EDUCATION
                                              STUDENT ACCOUNTING SYSTEM
                                          DETAIL LISTING BY SCHOOL AND CLASS
SCHOOL:  KANS CY AVTS SU                               FOR 1972                                   RUN ON 07/14/73    PAGE  158
 CLASS:  AUTO MECH 1400

                                OCCUP          MGT                           HANDICP  ANY  ----PROGRAM----  --COOP--  COMPL  REPORT   WORK  SCHL
  STUDENT NAME      NUMBER       OBJ     AGE   GOL   SEX   RACE   DISA    PHY MNT   PRB  CLS G/LV HR/INS  WAGE HRS  STATS  PERIOD  STATS  STATS

M G SUBLETT        313587127   170302    17    11    M    AFRO   NONE    NO   NO    NO   PVC   12    10
K M WHITMAN        510583984   170302    19    11    M    AFRO   NONE    NO   NO    NO   PVC   12    10
F   ANDERSON       510584003   170302    19    11    M    AFRO   ECON    NO   NO   YES   PVC   12    10
R   BRANCHM        510584836   170302    19    11    M    AFRO   ECON    NO   NO   YES   PVC   12    10
C   RICHARDSON     510621525   170302    18    11    M    AFRO   NONE    NO   NO    NO   PVC   12    10
J L BROWN          511565616   170302    20    11    M    AFRO   ECON    NO   NO   YES   PVC   12    10
W   FOLKS          511587546   170302    16    11    M    AFRO   NONE    NO   NO    NO   PVC   12    10
J D CUNNINGHAM     511589559   170302    17    11    M    AFRO   NONE    NO   NO    NO   PVC   12    10
V D BLEDSOE        512569945   170302    19    11    M    AFRO   ECON    NO   NO   YES   PVC   12    10
J K COLEMAN        512601796   170302    18    11    M    AFRO   ECON    NO   NO   YES   PVC   12    10
W M COLEMAN        514601976   170302    18    11    M    AFRO   ECON    NO   NO   YES   PVC   12    10
S F JAMISON        514603454   170302    18    11    M    AFRO   NONE    NO   NO    NO   PVC   12    10
K D HARDIN         515531161   170302    18    11    M    AFRO   NONE    NO   NO    NO   PVC   12    10
M F MCDONALD       515587497   170302    18    11    M    AFRO   ECON    NO   NO   YES   PPM   12    10
```

Figure 9: Sample Page of Selective Detail Listing Report

Table 2

PRINT-CODE DESCRIPTIONS FOR SELECT DETAIL LISTING NOT PRESENTED IN TABLE 1

PRINT-CODE	DESCRIPTION
COMPL (Completion Status)	
COMP	Complete program and left school
CO-CS	Complete program; taking other course work
CONT	Complete this year of program; will continue program
TRANS	Transfer; in similar program at new school
TR-OP	Transfer; not in program at new school
OP-CS	Drop program; continued in school
DP-JO	Drop schooling; full time employment in training or related field
DP-NE	Drop schooling; not employed in field
S-UNK	Drop or transfer; status unknown
MIST	Not in my program this year
DC-DS	Deceased or disabled
REPORT PERIOD (Indicates period of latest placement/follow-up information)	
PLCMNT	Initial placement
FLW 1	1st year follow-up
FLW 3	3rd year follow-up
FLW 5	5th year follow-up
WORK STATUS (Work status reported for latest report period)	
MIL	In armed forces
NW-SC	In school, not working
NILF	Not in labor force (marriage, etc.)
DC-DS	Not in labor force (disabled or deceased)
FT-TO	Work in trained occupation (full time)

Table 2 (continued)

PRINT-CODE	DESCRIPTION
FT-RO	Work in related occupation (full time)
FT-NO	Work in non-related occupation (full time)
PT-TO	Work in trained occupation (part time)
PT-RO	Work in related occupation (part time)
PT-NO	Work in non-related occupation (part time)
UNEMP	Unemployed, seeking employment
UNK	Status of student unknown.
R-ERR	Record in error, student not in class
SCHL STATS (School status reported for latest report period)	
FT-RF	School full time in related Voc Tech field
FT-NF	School full time in non-related Voc Tech field
PT-RF	School part time in related Voc Tech field
PT-NF	School part time in non-related Voc Tech field
TH-TR	In school in Voc or Tech teacher training
N-SCH	Not in school

b. Titles on 3139: In defining how a student is classified it is necessary to refer to the values associated with completion status and placement work status in Table 2. A student is not included in this report if he has a placement work status of R-ERR or a completion status other than COMP, CO-CS, or DP-JO.

   1) COMPLETED includes those that have a completion status of COMP or CO-CS.
   2) MARKETABLE SKILLS (left prior to normal completion but with marketable skills) includes those that have a completion status of DP-JO.
   3) STATUS UNKNOWN includes those that have placement work status of UNK or left blank.
   4) UNAVAILABLE FOR PLACEMENT includes those that have a placement work status of MIL, NW-SC, NILF, or DC-DS.
   5) CONTINUED EDUCATION includes those that have a placement work status of NW-SC.
   6) AVAILABLE FOR PLACEMENT includes those that have a placement work status of FT-TO, FT-RO, FT-NO, PT-TO, PT-RO, PT-NO, or UNEMP.
   7) EMPLOYED IN FIELD includes those that have a placement work status of FT-TO, FT-RO, PT-TO, or PT-RO.
   8) UNEMPLOYED includes those that have a placement work status of UNEMP.

4. Figures 10 and 11 illustrate typical report pages of 3138 and 3139.

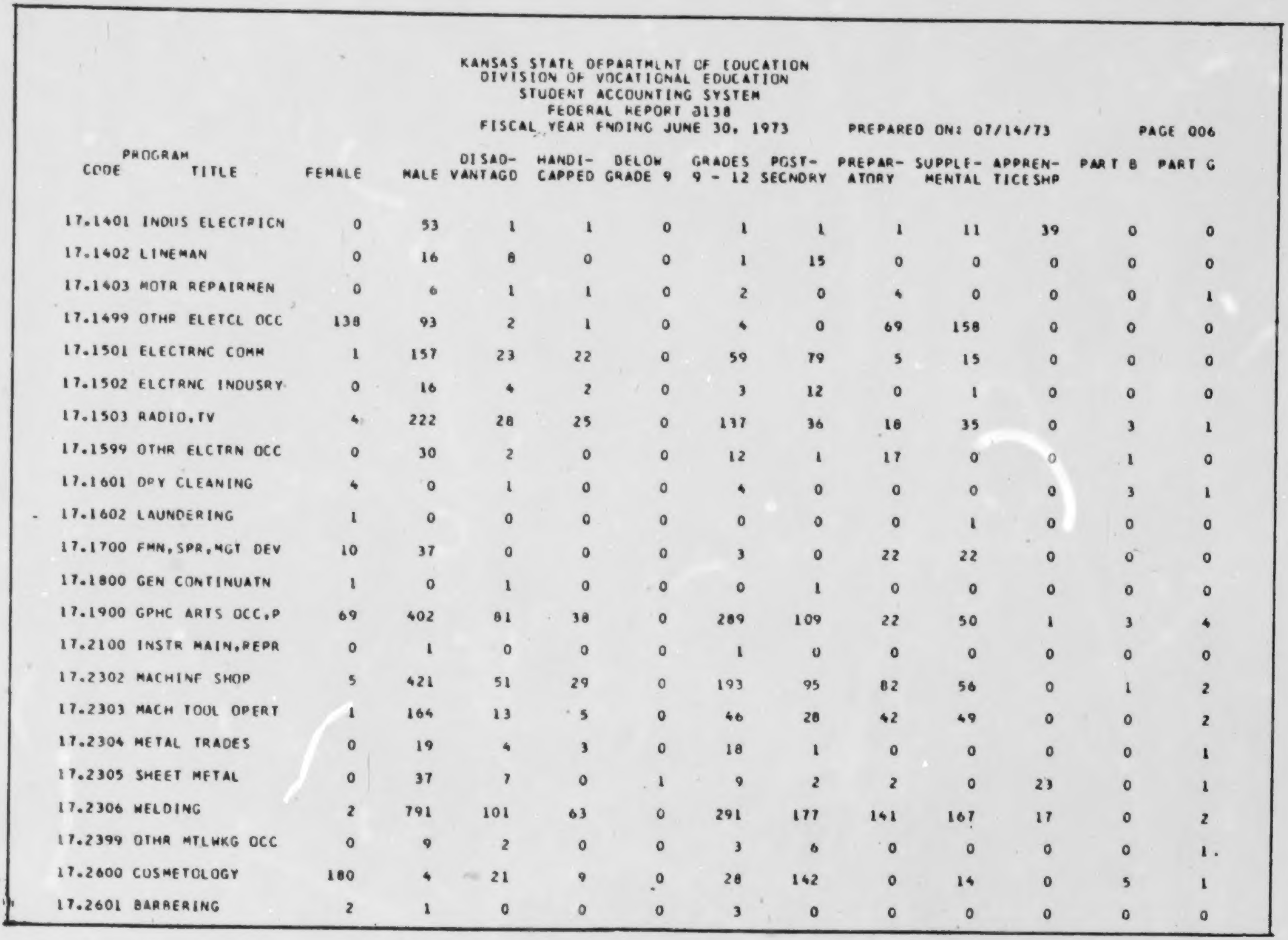
Summary Reports; Enrollment, Completion, and Placement

1. Purpose and Scope:

These reports provide a summary of enrollment, completion, and placement information based upon a minor within a major category. These categories being school, class, or occupational objective.

2. Special Features:

   a. Any one, two, or all three of the enrollment, completion, and placement reports may be requested.
   b. The report(s) may be based on:
      1) Class within school.



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                                   KANSAS STATE DEPARTMENT OF EDUCATION
                                    DIVISION OF VOCATIONAL EDUCATION
                                       STUDENT ACCOUNTING SYSTEM
                                          FEDERAL REPORT 3138
                                 FISCAL YEAR ENDING JUNE 30, 1973       PREPARED ON: 07/14/73        PAGE 006
         PROGRAM
   CODE          TITLE      FEMALE     MALE DISAD-  HANDI-  BELOW  GRADES  POST-  PREPAR- SUPPLE- APPREN-  PART B  PART G
                                            VANTAGD CAPPED GRADE 9 9 - 12 SECNDRY  ATORY   MENTAL TICESHP

17.1401 INDUS ELECTRICN        0       53       1       1      0       1      1       1      11      39       0       0
17.1402 LINEMAN                0       16       8       0      0       1     15       0       0       0       0       0
17.1403 MOTR REPAIRMEN         0        6       1       1      0       2      0       4       0       0       0       1
17.1499 OTHR ELETCL OCC      138       93       2       1      0       4      0      69     158       0       0       0
17.1501 ELECTRNC COMM          1      157      23      22      0      59     79       5      15       0       0       0
17.1502 ELCTRNC INDUSRY        0       16       4       2      0       3     12       0       1       0       0       0
17.1503 RADIO,TV               4      222      28      25      0     137     36      18      35       0       3       1
17.1599 OTHR ELCTRN OCC        0       30       2       0      0      12      1      17       0       0       1       0
17.1601 DRY CLEANING           4        0       1       0      0       4      0       0       0       0       3       1
17.1602 LAUNDERING             1        0       0       0      0       0      0       0       1       0       0       0
17.1700 FMN,SPR,MGT DEV       10       37       0       0      0       3      0      22      22       0       0       0
17.1800 GEN CONTINUATN         1        0       1       0      0       0      1       0       0       0       0       0
17.1900 GPHC ARTS OCC,P       69      402      81      38      0     289    109      22      50       1       3       4
17.2100 INSTR MAIN,REPR        0        1       0       0      0       1      0       0       0       0       0       0
17.2302 MACHINE SHOP           5      421      51      29      0     193     95      82      56       0       1       2
17.2303 MACH TOOL OPERT        1      164      13       5      0      46     28      42      49       0       0       2
17.2304 METAL TRADES           0       19       4       3      0      18      1       0       0       0       0       1
17.2305 SHEET METAL            0       37       7       0      1       9      2       2       0      23       0       1
17.2306 WELDING                2      791     101      63      0     291    177     141     167      17       0       2
17.2399 OTHR MTLWKG OCC        0        9       2       0      0       3      6       0       0       0       0       1
17.2600 COSMETOLOGY          180        4      21       9      0      28    142       0      14       0       5       1
17.2601 BARBERING              2        1       0       0      0       3      0       0       0       0       0       0
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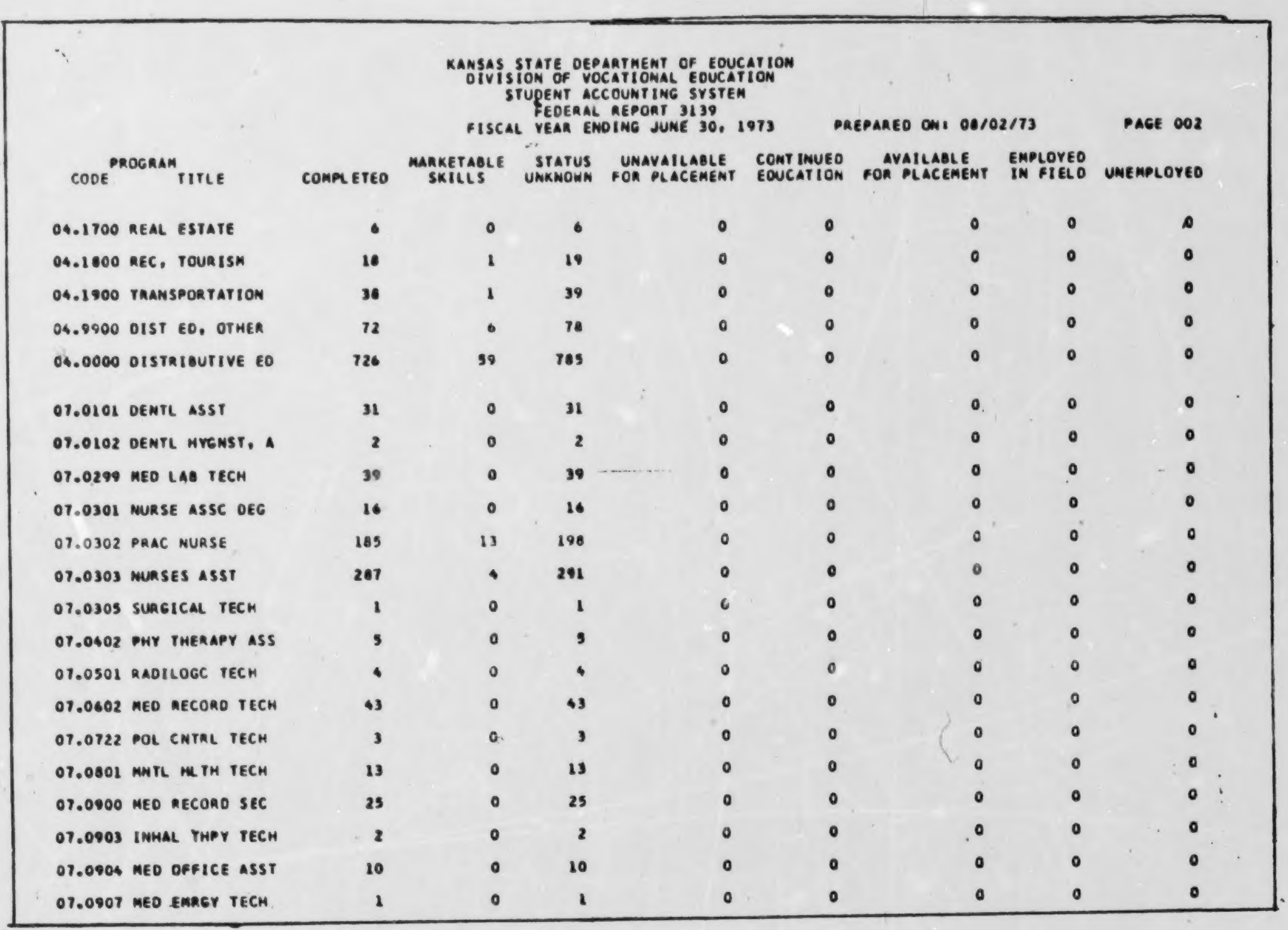
Figure 10: Sample Page of 3138 Report



KANSAS STATE DEPARTMENT OF EDUCATION
DIVISION OF VOCATIONAL EDUCATION
STUDENT ACCOUNTING SYSTEM
FEDERAL REPORT 3139
FISCAL YEAR ENDING JUNE 30, 1973 PREPARED ON: 08/02/73 PAGE 002

PROGRAM CODE	PROGRAM TITLE	COMPLETED	MARKETABLE SKILLS	STATUS UNKNOWN	UNAVAILABLE FOR PLACEMENT	CONTINUED EDUCATION	AVAILABLE FOR PLACEMENT	EMPLOYED IN FIELD	UNEMPLOYED
04.1700	REAL ESTATE	6	0	6	0	0	0	0	0
04.1800	REC, TOURISM	18	1	19	0	0	0	0	0
04.1900	TRANSPORTATION	38	1	39	0	0	0	0	0
04.9900	DIST ED, OTHER	72	6	78	0	0	0	0	0
04.0000	DISTRIBUTIVE ED	726	59	785	0	0	0	0	0
07.0101	DENTL ASST	31	0	31	0	0	0	0	0
07.0102	DENTL HYGNST, A	2	0	2	0	0	0	0	0
07.0299	MED LAB TECH	39	0	39	0	0	0	0	0
07.0301	NURSE ASSC DEG	16	0	16	0	0	0	0	0
07.0302	PRAC NURSE	185	13	198	0	0	0	0	0
07.0303	NURSES ASST	287	4	291	0	0	0	0	0
07.0305	SURGICAL TECH	1	0	1	0	0	0	0	0
07.0402	PHY THERAPY ASS	5	0	5	0	0	0	0	0
07.0501	RADILOGC TECH	4	0	4	0	0	0	0	0
07.0602	MED RECORD TECH	43	0	43	0	0	0	0	0
07.0722	POL CNTRL TECH	3	0	3	0	0	0	0	0
07.0801	MNTL HLTH TECH	13	0	13	0	0	0	0	0
07.0900	MED RECORD SEC	25	0	25	0	0	0	0	0
07.0903	INHAL THPY TECH	2	0	2	0	0	0	0	0
07.0904	MED OFFICE ASST	10	0	10	0	0	0	0	0
07.0907	MED EMRGY TECH	1	0	1	0	0	0	0	0

Figure 11: Sample Page of 3139 Report

        2) Occupational objective within school.
        3) School within class.
        4) Occupational objective within class.
        5) School within occupational objective.
        6) Class within occupational objective.

3. Coded Information:

Table 3 describes data titles used in this report.

4. Figures 12, 13, 14, 15, 16 and 17 are example pages of:
    a. Enrollment Detail.
    b. Enrollment Summary.
    c. Completion Detail.
    d. Completion Summary.
    e. Placement Detail.
    f. Placement Summary.

DATA COLLECTION

Enrollment information is obtained from enrollment forms completed by each student under the guidance of his instructor. These forms are collected and the information is transferred to magnetic tape by the OpScan optical page reader. The tape is then used as input to the TRANS program and the processing cycle begins. Also each instructor is responsible for completing and returning a prepunched completion, initial placement, and follow-up cards for each student in his class.

Teachers Guide to the Student Accounting System

1. A guide has been prepared to aid instructors in directing students in the process of filling out enrollment forms. Guides are sent to each instructor concerned with teaching any vocational education courses.

2. A sample guide is found in the Appendix.

Enrollment Form

1. The enrollment form (Figure 4) has been designed in such a manner that it may be scanned by the OpScan device. Information is transferred from this form to magnetic tape in a scrambled form (see Enrollment Form and Card).

Table 3

PRINT-CODE DESCRIPTIONS FOR SUMMARY REPORTS

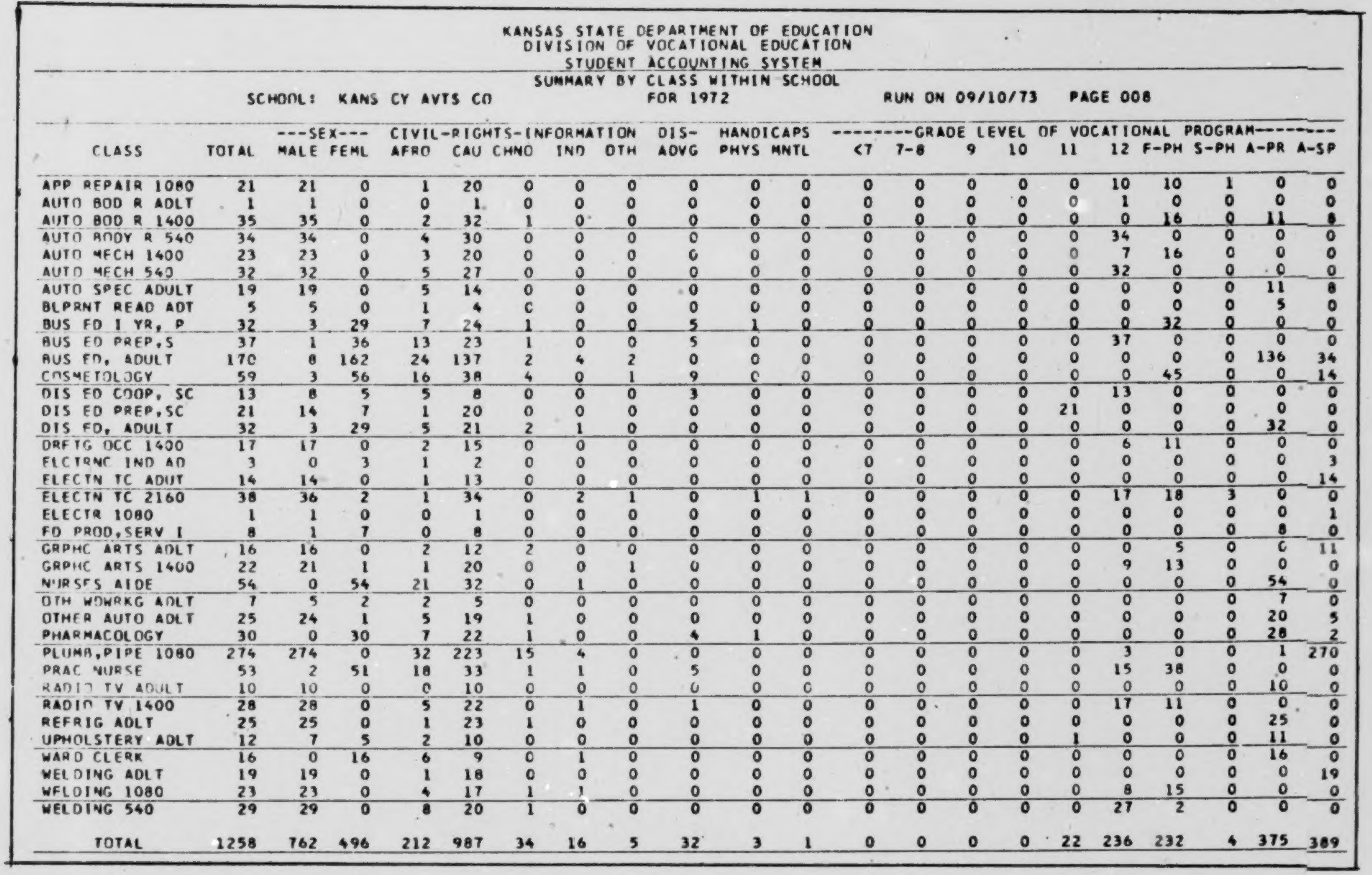
PRINT-CODE	DESCRIPTIONS
SEX	
MALE	Those of the male sex
FEML	Those of the female sex
RACE	
AFRO	Black American
CAU	Caucasian race
CHNO	Mexican and Spanish Americans
IND	American Indians
OTN	Races other than the above
DISADVG (those having any disadvantages)	
HANDICAPS	
PHYS	Those having any physical handicaps
MNTL	Those having a mental handicap
GRADE LEVEL OF VOCATIONAL PROGRAM	
<7	Below Grade 7
7-8	Grades 7 and 8
9	Grade 9
10	Grade 10
11	Grade 11
12	Grade 12
F-PH	First Year Post High
S-PH	Second Year Post High
A-PR	Adult Preparatory
A-SP	Adult Supplementary
COMPLETION INFORMATION	
COMP	Complete program left school
COCS	Complete program; taking other course work
CONT	Complete this year of program, will continue program

Table 3 (continued)

PRINT-CODE	DESCRIPTIONS
TRNS	Transfer; in similar program at new school
TRDP	Transfer; not in program at new school
DPCS	Drop Program; continued in school
DPJO	Drop schooling; full time employment in training or related field
DPNF	Drop schooling; not employed in training field
SUNK	Drop or transfer; status not known
MIST	Not in program this year
DCCS	Deceased or disabled
GRADE LEVEL OF VOCATIONAL PROGRAM	(same as Table 1)
PLACEMENT WORK STATUS	
MIL	In armed forces
MWSC	In school, not working
NILF	Not in labor force (married, etc.)
DCDS	Not in labor force (disabled or deceased)
FTTO	Working in occupation for which trained (full time)
FTRO	Working in occupation related to training (full time)
FTNO	Working in non related occupation (full time)
PTTO	Working in occupation for which trained (part time)
PTRO	Working in related occupation (part time)
PTNO	Working in non-related occupation (part time)
UNEM	Unemployed, seeking employment

Table 3 (continued)

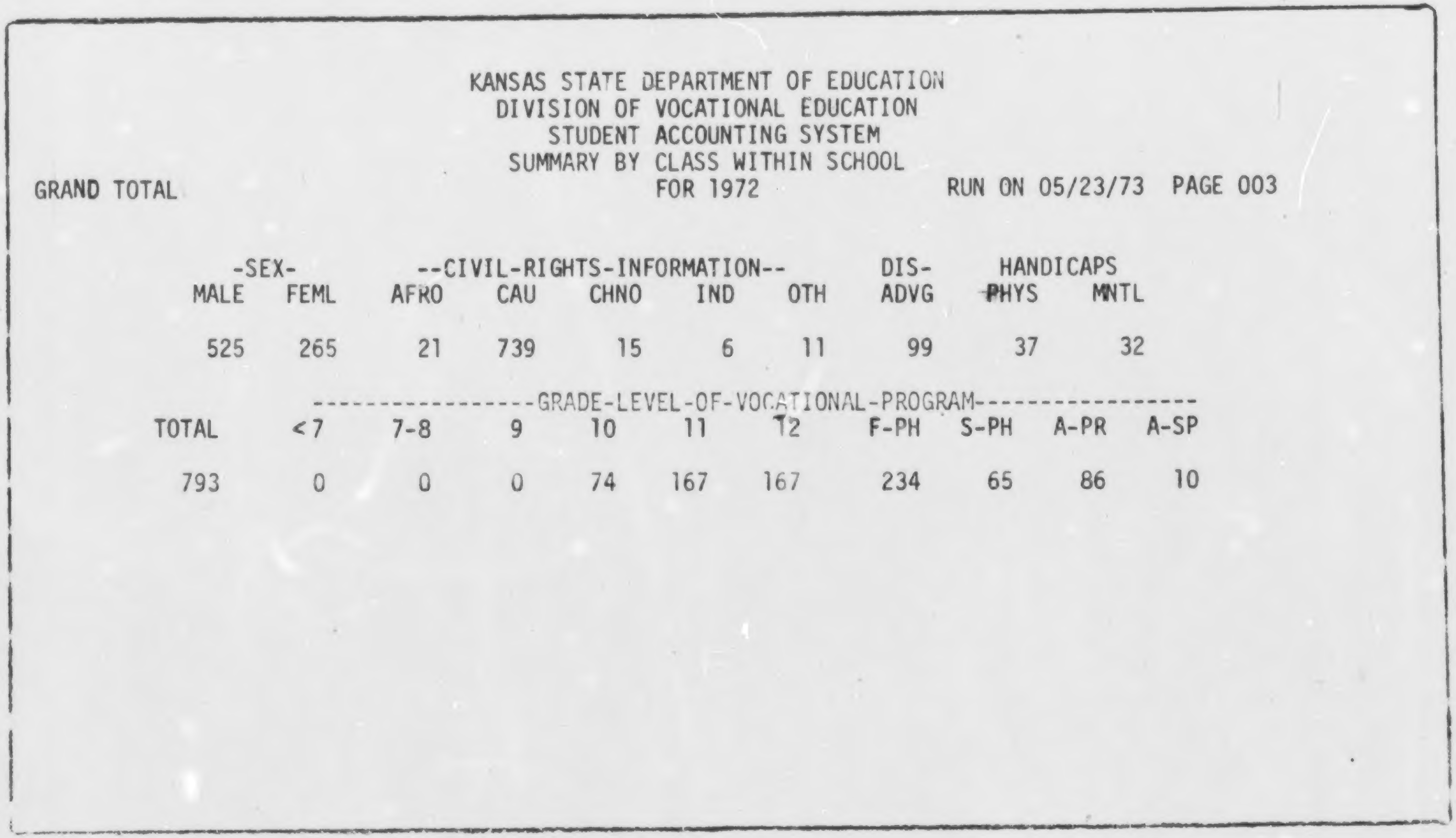
PRINT-CODE	DESCRIPTIONS
UNK	Status of student unknown
ERR	Record in error, student not in class
PLACEMENT SCHOOL STATUS	
FTRF	In school in field related to training (full time)
FTNF	In school in field not related to training (full time)
PTRf	In school in field related to training (part time)
PTNF	In school in field not related to training (part time)
THTR	In school in vocational or technical teaching training
NSCH	Not in school



KANSAS STATE DEPARTMENT OF EDUCATION
DIVISION OF VOCATIONAL EDUCATION
STUDENT ACCOUNTING SYSTEM
SUMMARY BY CLASS WITHIN SCHOOL
SCHOOL: KANS CY AVTS CO
FOR 1972
RUN ON 09/10/73
PAGE 008

		---SEX---		CIVIL-RIGHTS-INFORMATION					DIS-	HANDICAPS		--------GRADE LEVEL OF VOCATIONAL PROGRAM--------									
CLASS	TOTAL	MALE	FEML	AFRO	CAU	CHNO	IND	OTH	ADVG	PHYS	MNTL	<7	7-8	9	10	11	12	F-PH	S-PH	A-PR	A-SP
APP REPAIR 1080	21	21	0	1	20	0	0	0	0	0	0	0	0	0	0	0	10	10	1	0	0
AUTO BOD R ADLT	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
AUTO BOD R 1400	35	35	0	2	32	1	0	0	0	0	0	0	0	0	0	0	0	16	0	11	8
AUTO BODY R 540	34	34	0	4	30	0	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0
AUTO MECH 1400	23	23	0	3	20	0	0	0	0	0	0	0	0	0	0	0	7	16	0	0	0
AUTO MECH 540	32	32	0	5	27	0	0	0	0	0	0	0	0	0	0	0	32	0	0	0	0
AUTO SPEC ADULT	19	19	0	5	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	8
BLPRNT READ ADT	5	5	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
BUS ED I YR, P	32	3	29	7	24	1	0	0	5	1	0	0	0	0	0	0	0	32	0	0	0
BUS ED PREP,S	37	1	36	13	23	1	0	0	5	0	0	0	0	0	0	0	37	0	0	0	0
BUS ED, ADULT	170	8	162	24	137	2	4	2	0	0	0	0	0	0	0	0	0	0	0	136	34
COSMETOLOGY	59	3	56	16	38	4	0	1	9	0	0	0	0	0	0	0	0	45	0	0	14
DIS ED COOP, SC	13	8	5	5	8	0	0	0	3	0	0	0	0	0	0	0	13	0	0	0	0
DIS ED PREP,SC	21	14	7	1	20	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0
DIS ED, ADULT	32	3	29	5	21	2	1	0	0	0	0	0	0	0	0	0	0	0	0	32	0
DRFTG OCC 1400	17	17	0	2	15	0	0	0	0	0	0	0	0	0	0	0	6	11	0	0	0
ELCTRNC IND AD	3	0	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
ELECTN TC ADUT	14	14	0	1	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
ELECTN TC 2160	38	36	2	1	34	0	2	1	0	1	1	0	0	0	0	0	17	18	3	0	0
ELECTR 1080	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FD PROD,SERV I	8	1	7	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
GRPHC ARTS ADLT	16	16	0	2	12	2	0	0	0	0	0	0	0	0	0	0	0	5	0	0	11
GRPHC ARTS 1400	22	21	1	1	20	0	0	1	0	0	0	0	0	0	0	0	9	13	0	0	0
NURSES AIDE	54	0	54	21	32	0	1	0	0	0	0	0	0	0	0	0	0	0	0	54	0
OTH WOWRKG ADLT	7	5	2	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
OTHER AUTO ADLT	25	24	1	5	19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	20	5
PHARMACOLOGY	30	0	30	7	22	1	0	0	4	1	0	0	0	0	0	0	0	0	0	28	2
PLUMB,PIPE 1080	274	274	0	32	223	15	4	0	0	0	0	0	0	0	0	0	3	0	0	1	270
PRAC NURSE	53	2	51	18	33	1	1	0	5	0	0	0	0	0	0	0	15	38	0	0	0
RADIO TV ADULT	10	10	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0
RADIO TV 1400	28	28	0	5	22	0	1	0	1	0	0	0	0	0	0	0	17	11	0	0	0
REFRIG ADLT	25	25	0	1	23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0
UPHOLSTERY ADLT	12	7	5	2	10	0	0	0	0	0	0	0	0	0	0	1	0	0	0	11	0
WARD CLERK	16	0	16	6	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	16	0
WELDING ADLT	19	19	0	1	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
WELDING 1080	23	23	0	4	17	1	1	0	0	0	0	0	0	0	0	0	8	15	0	0	0
WELDING 540	29	29	0	8	20	1	0	0	0	0	0	0	0	0	0	0	27	2	0	0	0
TOTAL	1258	762	496	212	987	34	16	5	32	3	1	0	0	0	0	22	236	232	4	375	389

Figure 12: Sample Page of Enrollment Detail Report



```
                          KANSAS STATE DEPARTMENT OF EDUCATION
                           DIVISION OF VOCATIONAL EDUCATION
                             STUDENT ACCOUNTING SYSTEM
                            SUMMARY BY CLASS WITHIN SCHOOL
GRAND TOTAL                            FOR 1972              RUN ON 05/23/73  PAGE 003

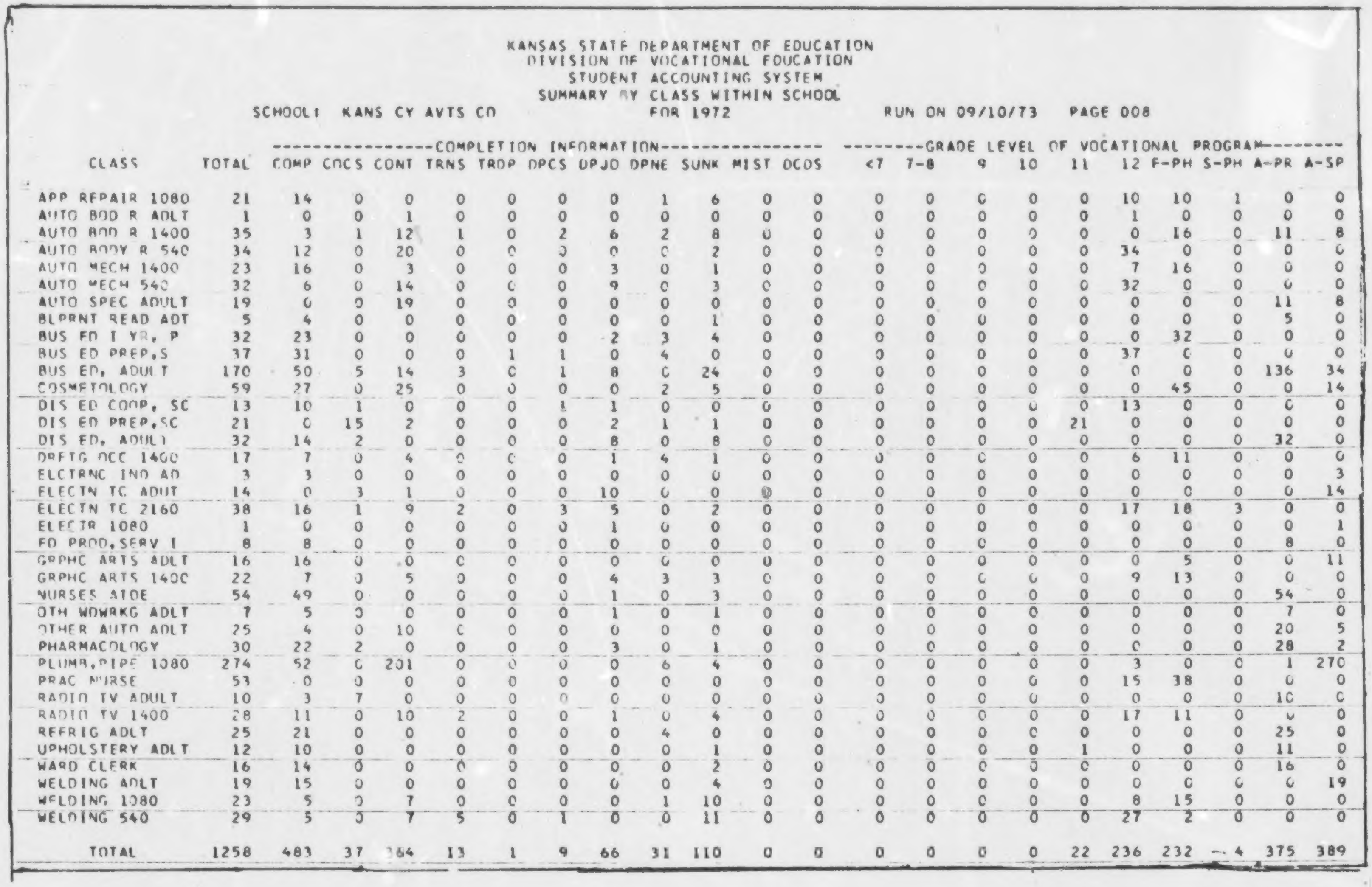
             -SEX-        --CIVIL-RIGHTS-INFORMATION--      DIS-     HANDICAPS
          MALE   FEML    AFRO    CAU   CHNO    IND    OTH   ADVG    PHYS    MNTL

           525    265      21    739     15      6     11     99      37      32

                 -----------------GRADE-LEVEL-OF-VOCATIONAL-PROGRAM-----------------
        TOTAL      <7     7-8      9     10     11     12   F-PH    S-PH    A-PR    A-SP

          793       0       0      0     74    167    167    234      65      86      10
```

Figure 13: Sample Page of Enrollment Summary Report



```
                                              KANSAS STATE DEPARTMENT OF EDUCATION
                                               DIVISION OF VOCATIONAL EDUCATION
                                                  STUDENT ACCOUNTING SYSTEM
                                                SUMMARY BY CLASS WITHIN SCHOOL
                    SCHOOL:  KANS CY AVTS CO                FOR 1972                    RUN ON 09/10/73   PAGE 008

                            ----------------COMPLETION INFORMATION----------------  ---------GRADE LEVEL OF VOCATIONAL PROGRAM---------
      CLASS         TOTAL  COMP CDCS CONT TRNS TRDP DPCS DPJO DPNE SUNK MIST DCOS    <7  7-8    9   10   11   12 F-PH S-PH A-PR A-SP

 APP REPAIR 1080       21    14    0    0    0    0    0    0    1    6    0    0     0    0    0    0    0   10   10    1    0    0
 AUTO BOD R ADLT        1     0    0    1    0    0    0    0    0    0    0    0     0    0    0    0    0    1    0    0    0    0
 AUTO BOD R 1400       35     3    1   12    1    0    2    6    2    8    0    0     0    0    0    0    0    0   16    0   11    8
 AUTO BODY R 540       34    12    0   20    0    0    0    0    0    2    0    0     0    0    0    0    0   34    0    0    0    0
 AUTO MECH 1400        23    16    0    3    0    0    0    3    0    1    0    0     0    0    0    0    0    7   16    0    0    0
 AUTO MECH 540         32     6    0   14    0    0    0    9    0    3    0    0     0    0    0    0    0   32    0    0    0    0
 AUTO SPEC ADULT       19     0    0   19    0    0    0    0    0    0    0    0     0    0    0    0    0    0    0    0   11    8
 BLPRNT READ ADT        5     4    0    0    0    0    0    0    0    1    0    0     0    0    0    0    0    0    0    0    5    0
 BUS ED I YR, P        32    23    0    0    0    0    0    2    3    4    0    0     0    0    0    0    0    0   32    0    0    0
 BUS ED PREP,S         37    31    0    0    0    1    1    0    4    0    0    0     0    0    0    0    0   37    0    0    0    0
 BUS ED, ADULT        170    50    5   14    3    0    1    8    0   24    0    0     0    0    0    0    0    0    0    0  136   34
 COSMETOLOGY           59    27    0   25    0    0    0    0    2    5    0    0     0    0    0    0    0    0   45    0    0   14
 DIS ED COOP, SC       13    10    1    0    0    0    1    1    0    0    0    0     0    0    0    0    0   13    0    0    0    0
 DIS ED PREP,SC        21     0   15    2    0    0    0    2    1    1    0    0     0    0    0    0   21    0    0    0    0    0
 DIS ED, ADULT         32    14    2    0    0    0    0    8    0    8    0    0     0    0    0    0    0    0    0    0   32    0
 DRFTG OCC 1400        17     7    0    4    0    0    0    1    4    1    0    0     0    0    0    0    0    6   11    0    0    0
 ELCTRNC IND AD         3     3    0    0    0    0    0    0    0    0    0    0     0    0    0    0    0    0    0    0    0    3
 ELECTN TC ADUT        14     0    3    1    0    0    0   10    0    0    0    0     0    0    0    0    0    0    0    0    0   14
 ELECTN TC 2160        38    16    1    9    2    0    3    5    0    2    0    0     0    0    0    0    0   17   18    3    0    0
 ELECTR 1080            1     0    0    0    0    0    0    1    0    0    0    0     0    0    0    0    0    0    0    0    0    1
 FD PROD,SERV I         8     8    0    0    0    0    0    0    0    0    0    0     0    0    0    0    0    0    0    0    8    0
 GRPHC ARTS ADLT       16    16    0    0    0    0    0    0    0    0    0    0     0    0    0    0    0    0    5    0    0   11
 GRPHC ARTS 1400       22     7    0    5    0    0    0    4    3    3    0    0     0    0    0    0    0    9   13    0    0    0
 NURSES AIDE           54    49    0    0    0    0    0    1    0    3    0    0     0    0    0    0    0    0    0    0   54    0
 OTH WDWRKG ADLT        7     5    0    0    0    0    0    1    0    1    0    0     0    0    0    0    0    0    0    0    7    0
 OTHER AUTO ADLT       25     4    0   10    0    0    0    0    0    0    0    0     0    0    0    0    0    0    0    0   20    5
 PHARMACOLOGY          30    22    2    0    0    0    0    3    0    1    0    0     0    0    0    0    0    0    0    0   28    2
 PLUMB,PIPE 1080      274    52    0  201    0    0    0    0    6    4    0    0     0    0    0    0    0    3    0    0    1  270
 PRAC NURSE            53     0    0    0    0    0    0    0    0    0    0    0     0    0    0    0    0   15   38    0    0    0
 RADIO TV ADULT        10     3    7    0    0    0    0    0    0    0    0    0     0    0    0    0    0    0    0    0   10    0
 RADIO TV 1400         28    11    0   10    2    0    0    1    0    4    0    0     0    0    0    0    0   17   11    0    0    0
 REFRIG ADLT           25    21    0    0    0    0    0    0    4    0    0    0     0    0    0    0    0    0    0    0   25    0
 UPHOLSTERY ADLT       12    10    0    0    0    0    0    0    0    1    0    0     0    0    0    0    1    0    0    0   11    0
 WARD CLERK            16    14    0    0    0    0    0    0    0    2    0    0     0    0    0    0    0    0    0    0   16    0
 WELDING ADLT          19    15    0    0    0    0    0    0    0    4    0    0     0    0    0    0    0    0    0    0    0   19
 WELDING 1080          23     5    0    7    0    0    0    0    1   10    0    0     0    0    0    0    0    8   15    0    0    0
 WELDING 540           29     5    0    7    5    0    1    0    0   11    0    0     0    0    0    0    0   27    2    0    0    0

     TOTAL           1258   483   37  364   13    1    9   66   31  110    0    0     0    0    0    0   22  236  232    4  375  389
```

Figure 14: Sample Page of Completion Detail Report

```
                              KANSAS STATE DEPARTMENT OF EDUCATION
                                DIVISION OF VOCATIONAL EDUCATION
                                   STUDENT ACCOUNTING SYSTEM
                                 SUMMARY BY CLASS WITHIN SCHOOL
GRAND TOTAL                                   FOR 1972              RUN ON 05/23/73   PAGE 003

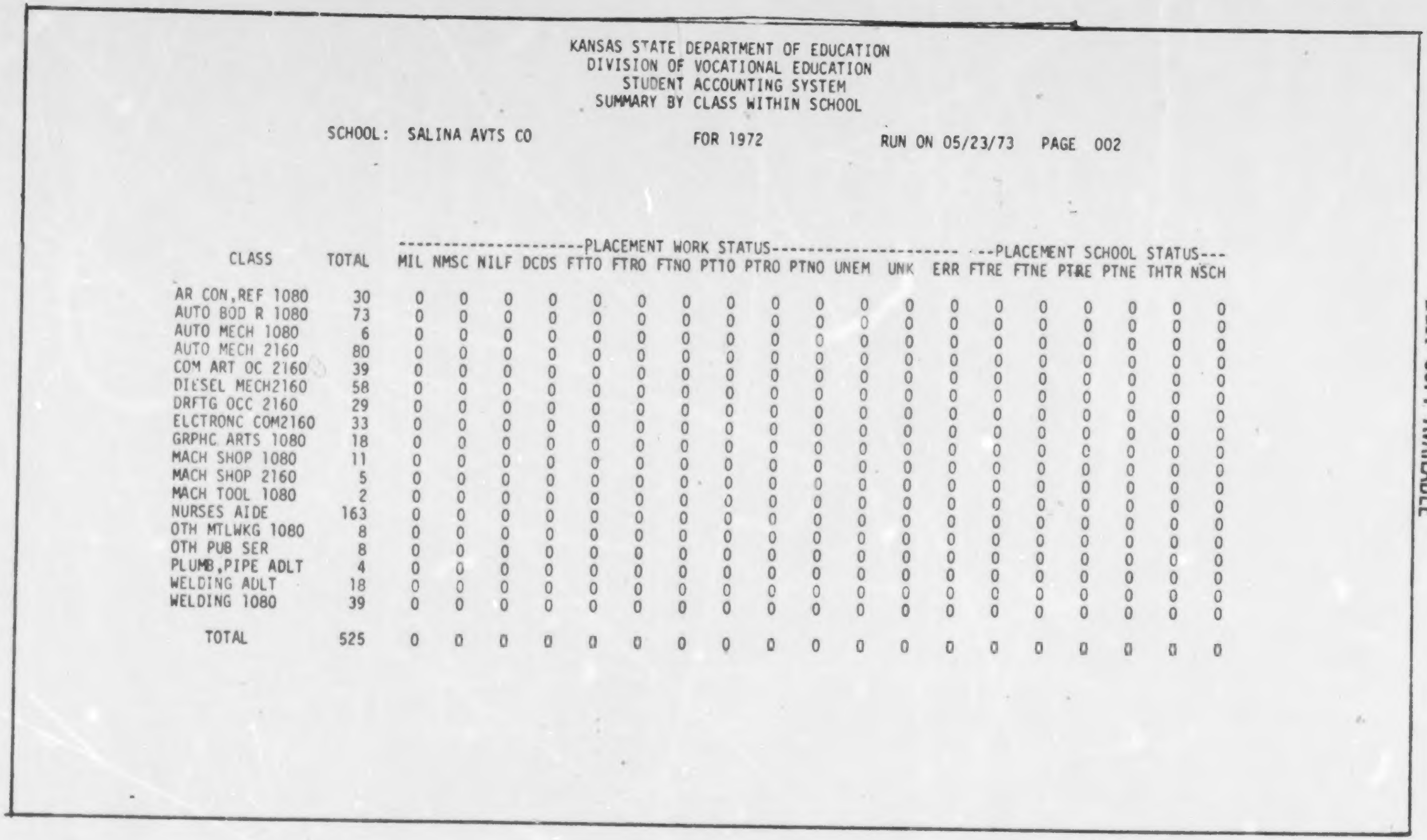
        -------------------------COMPLETION-INFORMATION-------------------------
        COMP    COCS    CONT    TRNS    TRDP    DPCS    DPJO    DPNE    SUNK    MIST    DCDS

         20      24      15      2       20      6       3       2       4       3       1

                 ----------------GRADE-LEVEL-OF-VOCATIONAL-PROGRAM---------------
        TOTAL    <7      7-8     9       10      11      12     F-PH    S-PH    A-PR    A-SP

         793      0       0      0       74      167     167     224     65      86      10
```

Figure 15: Sample Page of Completion Summary Report



```
                         KANSAS STATE DEPARTMENT OF EDUCATION
                          DIVISION OF VOCATIONAL EDUCATION
                            STUDENT ACCOUNTING SYSTEM
                          SUMMARY BY CLASS WITHIN SCHOOL

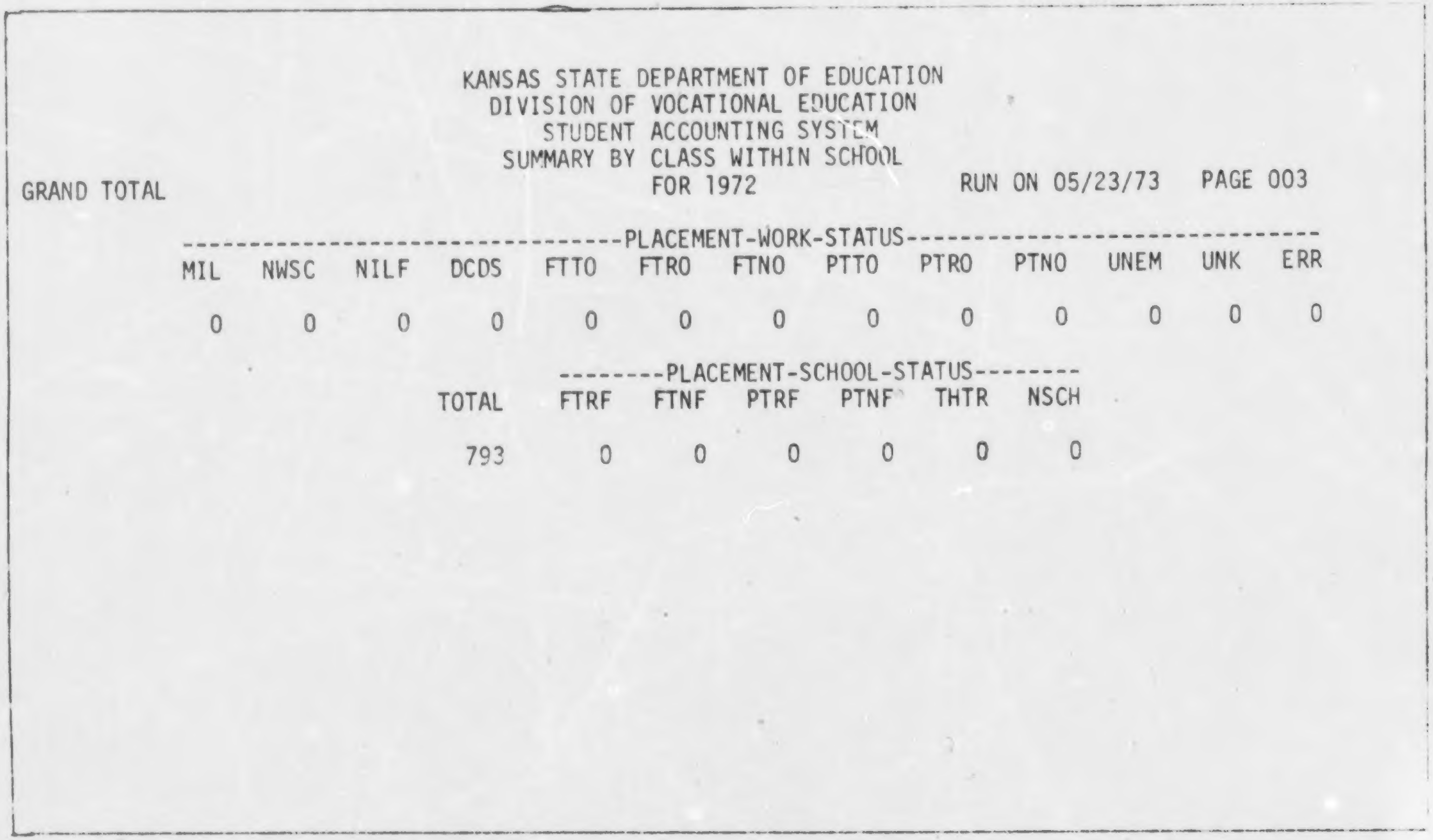
     SCHOOL:  SALINA AVTS CO               FOR 1972           RUN ON 05/23/73   PAGE  002


                    ---------------------PLACEMENT WORK STATUS---------------------  ---PLACEMENT SCHOOL STATUS---
  CLASS           TOTAL  MIL NMSC NILF DCDS FTTO FTRO FTNO PTTO PTRO PTNO UNEM  UNK  ERR FTRE FTNE PTRE PTNE THTR NSCH

AR CON,REF 1080     30    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
AUTO BOD R 1080     73    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
AUTO MECH 1080       6    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
AUTO MECH 2160      80    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
COM ART OC 2160     39    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
DIESEL MECH2160     58    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
DRFTG OCC 2160      29    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
ELCTRONC COM2160    33    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
GRPHC ARTS 1080     18    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
MACH SHOP 1080      11    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
MACH SHOP 2160       5    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
MACH TOOL 1080       2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
NURSES AIDE        163    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
OTH MTLWKG 1080      8    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
OTH PUB SER          8    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
PLUMB,PIPE ADLT      4    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
WELDING ADLT        18    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
WELDING 1080        39    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

   TOTAL           525    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
```

Figure 16: Sample Page of Placement Detail Report



```
                           KANSAS STATE DEPARTMENT OF EDUCATION
                            DIVISION OF VOCATIONAL EDUCATION
                              STUDENT ACCOUNTING SYSTEM
                            SUMMARY BY CLASS WITHIN SCHOOL
GRAND TOTAL                            FOR 1972              RUN ON 05/23/73   PAGE 003

      -------------------------------PLACEMENT-WORK-STATUS------------------------------
      MIL   NWSC   NILF   DCDS   FTTO   FTRO   FTNO   PTTO   PTRO   PTNO   UNEM   UNK   ERR

        0      0      0      0      0      0      0      0      0      0      0     0     0

                            --------PLACEMENT-SCHOOL-STATUS--------
                     TOTAL    FTRF   FTNF   PTRF   PTNF   THTR   NSCH

                       793       0      0      0      0      0      0
```

Figure 17: Sample Page of Placement Summary Report

2. The following items must be provided to the operator of the OpScan device, along with the enrollment forms:

- a. Instructions stating that the forms are to be read as:
  - 1) High density.
  - 2) Full page double line.
  - 3) Do not reject for multiple or missing marks.
- b. A 'K-Sheet' which shows which fields are to be read as characters (see Figure 18).
- c. A 'Q-Sheet' which shows the starting and finishing positions of each column to be read (see Figure 19).

Completion Card

1. Completion cards are sent to the instructors:

- a. In the case of adult classes, immediately upon inclusion of the student into the master file.
- b. In the case of nonadult classes, approximately May 1.

2. The format of the card is described in "Program UPDATE". The manner in which the punching and printing of the information on the cards is done is discussed in "IMPLEMENTATION".

3. See Figure 5 for an example completion card.

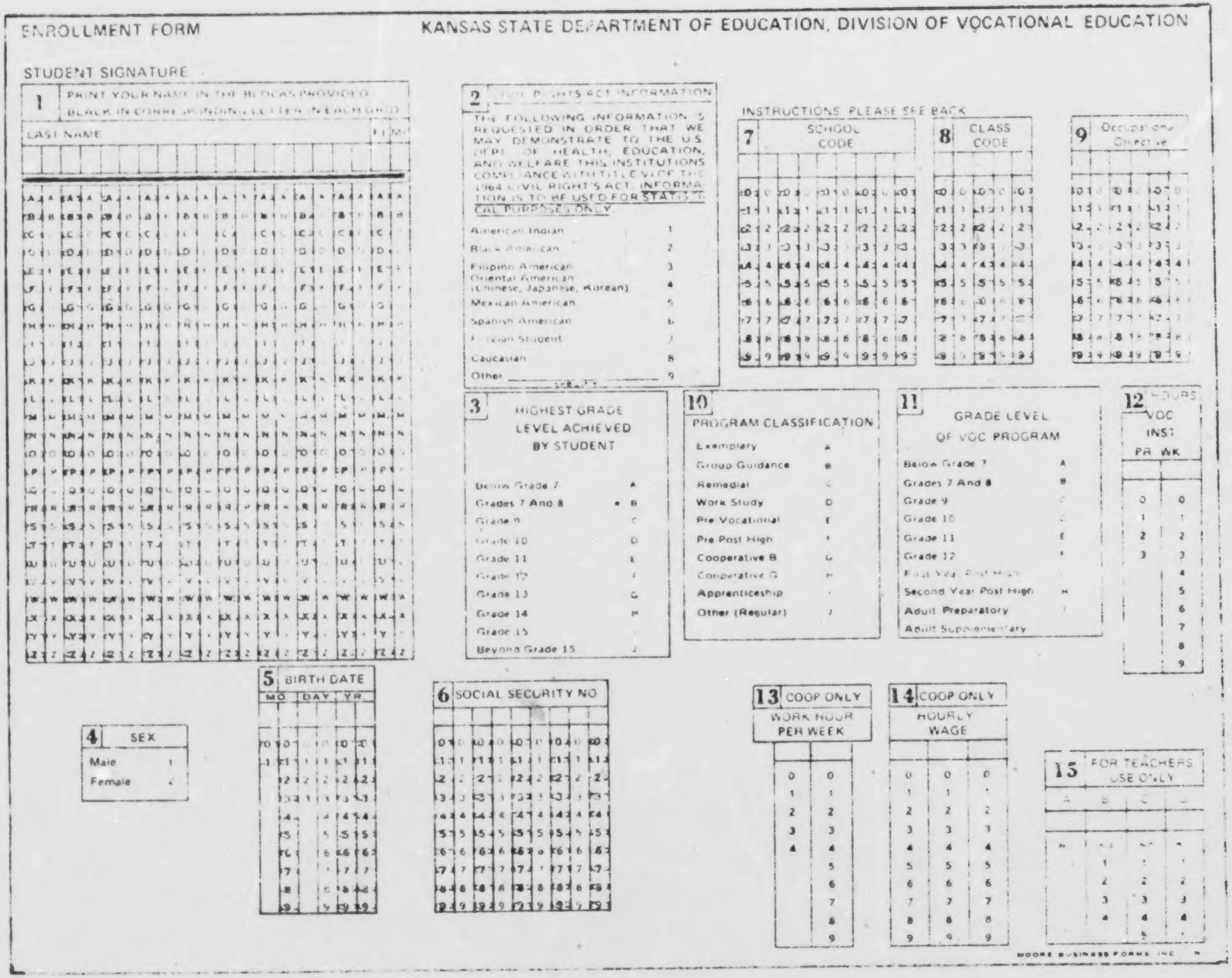
Initial Placement and Follow-Up Card

1. The cards are sent to the instructors at the following times:

- a. Initial placement - September 1 following graduation or completion.
- b. First year follow-up - May 1 on first year following completion (nonadult only).
- c. Third year follow-up - May 1 on third year following completion (nonadult only).
- d. Fifth year follow-up - May 1 on fifth year following completion (nonadult only).

2. The format of the cards is the same and is given in "Program UPDATE". The manner in which the punching and printing of the information on the cards is done is discussed in "IMPLEMENTATION".

3. See Figure 6 for an example follow-up form.



ENROLLMENT FORM

KANSAS STATE DEPARTMENT OF EDUCATION, DIVISION OF VOCATIONAL EDUCATION

STUDENT SIGNATURE

1 PRINT YOUR NAME IN THE BLOCKS PROVIDED
BLACK IN CORRESPONDING LETTER IN EACH GRID

LAST NAME F I M I

2 CIVIL RIGHTS ACT INFORMATION

THE FOLLOWING INFORMATION IS REQUESTED IN ORDER THAT WE MAY DEMONSTRATE TO THE U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE THIS INSTITUTIONS COMPLIANCE WITH TITLE VI OF THE 1964 CIVIL RIGHT'S ACT. INFORMATION IS TO BE USED FOR STATISTICAL PURPOSES ONLY.

American Indian	1
Black American	2
Filipino American	3
Oriental American (Chinese, Japanese, Korean)	4
Mexican American	5
Spanish American	6
Foreign Student	7
Caucasian	8
Other ______	9

3 HIGHEST GRADE LEVEL ACHIEVED BY STUDENT

Below Grade 7	A
Grades 7 And 8	B
Grade 9	C
Grade 10	D
Grade 11	E
Grade 12	F
Grade 13	G
Grade 14	H
Grade 15	I
Beyond Grade 15	J

4 SEX

Male	1
Female	2

5 BIRTH DATE

MO DAY YR

6 SOCIAL SECURITY NO

INSTRUCTIONS PLEASE SEE BACK

7 SCHOOL CODE

8 CLASS CODE

9 Occupational Objective

10 PROGRAM CLASSIFICATION

Exemplary	A
Group Guidance	B
Remedial	C
Work Study	D
Pre Vocational	E
Pre Post High	F
Cooperative B	G
Cooperative G	H
Apprenticeship	I
Other (Regular)	J

11 GRADE LEVEL OF VOC PROGRAM

Below Grade 7	A
Grades 7 And 8	B
Grade 9	C
Grade 10	D
Grade 11	E
Grade 12	F
First Year Post High	G
Second Year Post High	H
Adult Preparatory	I
Adult Supplementary	

12 HOURS VOC INST PR WK

13 COOP ONLY
WORK HOUR PER WEEK

14 COOP ONLY
HOURLY WAGE

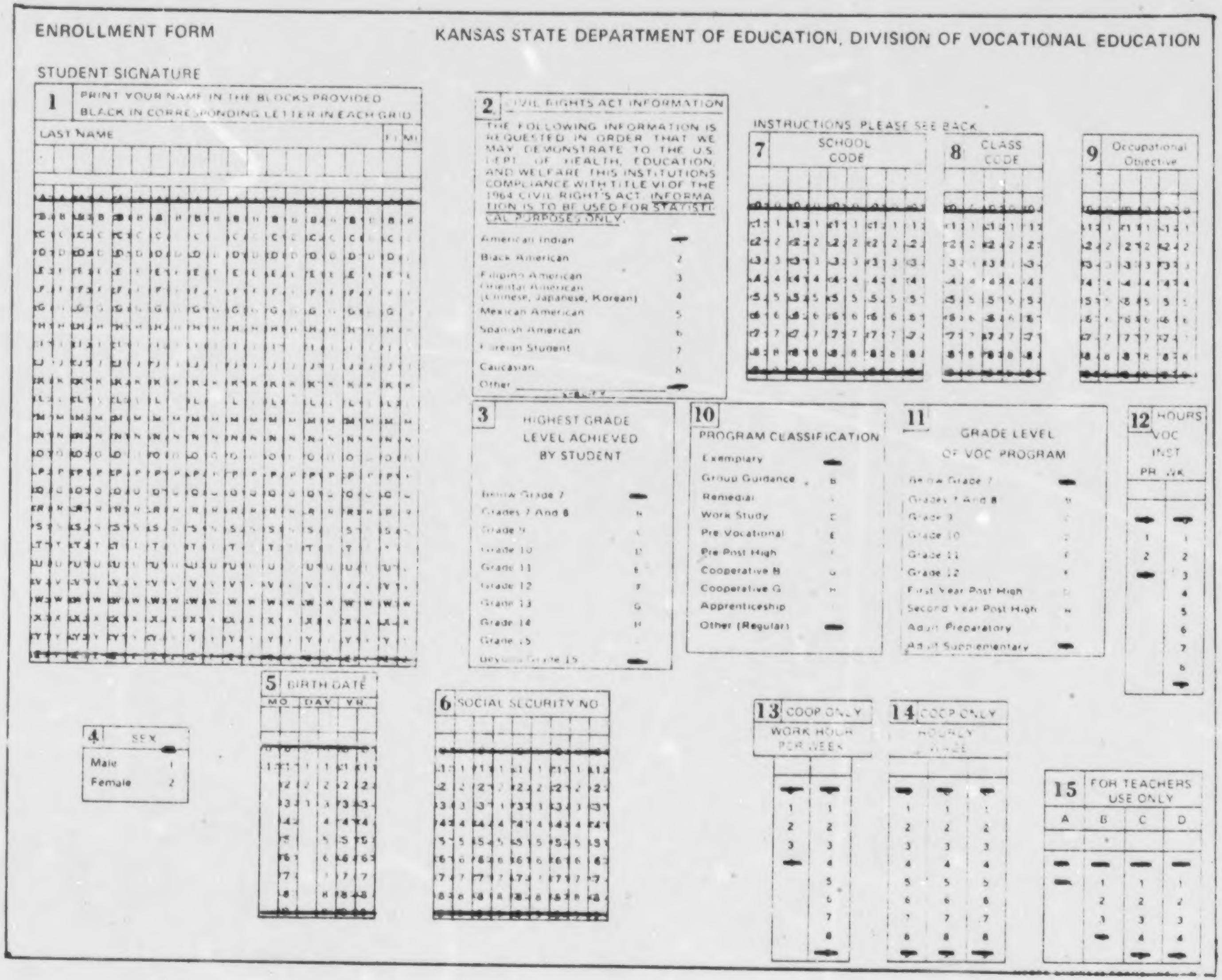
15 FOR TEACHERS USE ONLY

A B C D

MOORE BUSINESS FORMS INC

Figure 18: K-Sheet

BEST COPY AVAILABLE



ENROLLMENT FORM

KANSAS STATE DEPARTMENT OF EDUCATION, DIVISION OF VOCATIONAL EDUCATION

STUDENT SIGNATURE

1 PRINT YOUR NAME IN THE BLOCKS PROVIDED BLACK IN CORRESPONDING LETTER IN EACH GRID

LAST NAME F.I. M.I.

2 CIVIL RIGHTS ACT INFORMATION

THE FOLLOWING INFORMATION IS REQUESTED IN ORDER THAT WE MAY DEMONSTRATE TO THE U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE THIS INSTITUTIONS COMPLIANCE WITH TITLE VI OF THE 1964 CIVIL RIGHT'S ACT. INFORMATION IS TO BE USED FOR STATISTICAL PURPOSES ONLY.

- American Indian
- Black American 2
- Filipino American 3
- Oriental American (Chinese, Japanese, Korean) 4
- Mexican American 5
- Spanish American 6
- Foreign Student 7
- Caucasian 8
- Other ______

INSTRUCTIONS PLEASE SEE BACK

7 SCHOOL CODE

8 CLASS CODE

9 Occupational Objective

3 HIGHEST GRADE LEVEL ACHIEVED BY STUDENT

- Below Grade 7
- Grades 7 And 8 B
- Grade 9 C
- Grade 10 D
- Grade 11 E
- Grade 12 F
- Grade 13 G
- Grade 14 H
- Grade 15
- Beyond Grade 15

10 PROGRAM CLASSIFICATION

- Exemplary
- Group Guidance B
- Remedial
- Work Study D
- Pre Vocational E
- Pre Post High
- Cooperative B G
- Cooperative G H
- Apprenticeship
- Other (Regular)

11 GRADE LEVEL OF VOC PROGRAM

- Below Grade 7
- Grades 7 And 8 B
- Grade 9
- Grade 10
- Grade 11 E
- Grade 12 F
- First Year Post High
- Second Year Post High H
- Adult Preparatory
- Adult Supplementary

12 HOURS VOC INST

PR. WK.

4 SEX

- Male 1
- Female 2

5 BIRTH DATE

MO. DAY YR.

6 SOCIAL SECURITY NO

13 COOP ONLY WORK HOUR PER WEEK

14 COOP ONLY HOURLY WAGE

15 FOR TEACHERS USE ONLY

A B C D

Figure 19: Q-Sheet

BEST COPY AVAILABLE

PROGRAMS

This section contains a detailed description of the eight programs in the system and the total system flow. This section, however, makes no attempt to describe implementation of the system. Figure 20 is a System Flow Chart.

Program INIT

1. Purpose:

This program is designed to initialize the two master file tapes and initialize the sequence counter used by the TRANS program to generate unique student numbers.

2. Program Operation:

The program reads one parameter card containing the tape volume names and the beginning sequence number. The first record of the Codes File (see Codes File) is read and the leading tape record is formatted and written to each master file tape. The sequence number is then stored on disk.

3. File descriptions:

a. MSGFILE:

This file contains one of the messages listed in the PROCEDURE DIVISION of the program listing (Figure 21).

b. SEQNUMB:

This is a 7 byte data set used by the TRANS program (see program TRANS).

c. CODELST:

Only the first record of this file which contains the fiscal year and state title is used.

d. CARDIN:

1) This file is used to input tape names and a sequence value.

2) Its format is:

Col 1-6	tape name 1
Col 7-12	tape name 2
Col 13-19	7 digit sequence number
Col 20-80	unused.

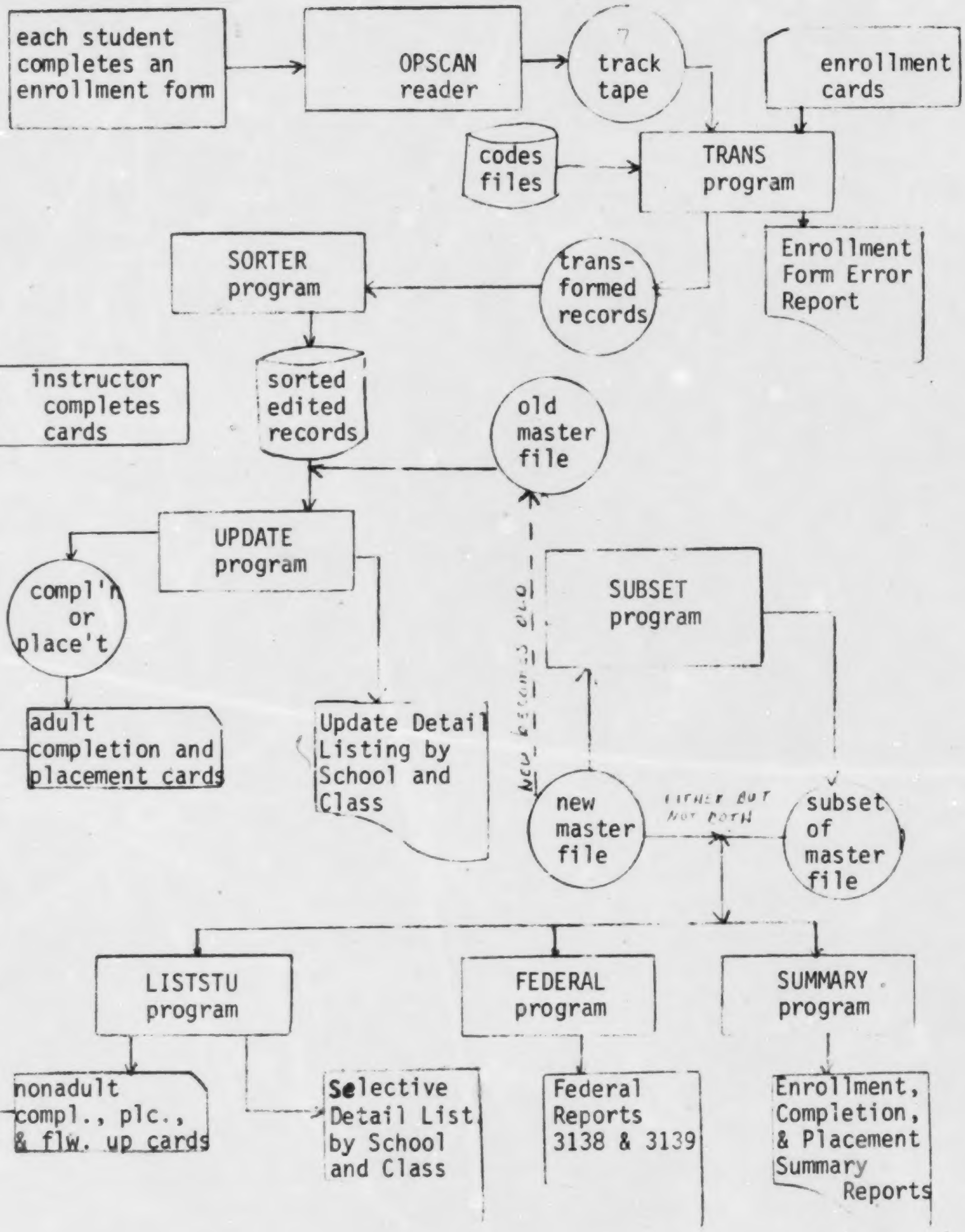

each student completes an enrollment form
OPSCAN reader
7 track tape
enrollment cards
codes files
TRANS program
SORTER program
trans-formed records
Enrollment Form Error Report
instructor completes cards
sorted edited records
old master file
UPDATE program
compl'n or place't
SUBSET program
adult completion and placement cards
Update Detail Listing by School and Class
New records old
new master file
EITHER BUT NOT BOTH
subset of master file
LISTSTU program
FEDERAL program
SUMMARY program
nonadult compl., plc., & flw. up cards
Selective Detail List by School and Class
Federal Reports 3138 & 3139
Enrollment, Completion, & Placement Summary Reports

Figure 20: System Flow Chart

e. FILE1 and FILE2:

1) These are the two master files to be used by the UPDATE program.

2) One record is written to each file in the format:

Positions	1 - 67	spaces
Positions	68 - 73	volume name
Positions	74 - 77	fiscal year
Positions	78 - 125	state name
Positions	126 - 131	run-date (date created or last updated)

4. Example Error Messages:

Only one of three messages can appear:

a. ***ERROR*** CODELST NOT PRESENT.

b. ***ERROR*** VOLUME NAMES AND FIRST SEQUENCE. NUMBER NOT SPECIFIED.

c. NORMAL TERMINATION OF INITIATOR PROGRAM.

5. Program flow chart:

Because of the simplicity of this program, it was deemed that a flow chart would be of no value. The user should refer directly to the COBOL source listing (Figure 21).

Program TRANS

1. Purpose:

This program was designed to perform error checks on the initial data (enrollment form or card) and add information to the output record which is used to update the master file.

2. Program Operation:

a. The entire CODES file (see Codes File) is read in. The first record is used to set the page title to the right year and state. The remainder is loaded into tables used to verify correct school, class, and occupation codes.

b. The SEQNUMB file is read. This is used to generate a unique student number when the SSN is left blank.

c. In turn, each student record is read and checked for errors (see "Enrollment Form Error Report" for description of the errors checked). All enrollment cards are processed first followed by the enrollment forms (now on tape).

```
IDENTIFICATION DIVISION.
PROGRAM-ID.
    INIT.
REMARKS.
    THIS PROGRAM INITIALIZES THE OLD AND NEW MASTER TAPES
    WITH THE YEAR AND STATE INDICATED BY THE FIRST RECORD IN
    THE CODLST FILE.  THIS PROGRAM ALSO INITIALIZES THE
    SEQUENCE NUMBER FILE TO THE VALUE READ IN.
AUTHOR.
    JAMES S VANCE.
INSTALLATION.
    KANSAS STATE UNIVERSITY COMPUTING CENTER.



ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.
    IBM-360-H50.
OBJECT-COMPUTER.
    IBM-360-H50.


INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT  MSGFILE ASSIGN TO UT-S-MSGFILE.
    SELECT  SEQNUMB ASSIGN TO UT-S-SEQNUMB.
    SELECT  CODELST ASSIGN TO UT-S-CODELST.
    SELECT    FILE1 ASSIGN TO UT-S-FILE1.
    SELECT    FILE2 ASSIGN TO UT-S-FILE2.
    SELECT   CARDIN ASSIGN TO UT-S-CARDIN.



DATA DIVISION.
FILE SECTION.
FD  CODELST LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 135 RECORDS
            RECORD CONTAINS 53 CHARACTERS
            DATA RECORD IS FIRST-REC.
01  FIRST-REC.
    05  FILLER PIC X.
    05  YEAR-STATE PIC X(52).
```

Figure 21: Source Listing of INIT

```
    FILE1   LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 55 RECORDS
            RECORD CONTAINS 131 CHARACTERS
            DATA RECORD IS TAPE-REC1.
01  TAPE-REC1 PIC X(131).
FD  FILE2   LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 55 RECORDS
            RECORD CONTAINS 131 CHARACTERS
            DATA RECORD IS TAPE-REC2.
01  TAPE-REC2 PIC X(131).
FD  CARDIN  LABEL RECORD IS MISSING
            DATA RECORD IS CARD-REC.
01  CARD-REC.
    05  VOLUME-1 PIC X(6).
    05  VOLUME-2 PIC X(6).
    05  SEQ-NUMB PIC 9(7).
    05  FILLER PIC X(61).
FD  SEQNUMB LABEL RECORD IS MISSING
            DATA RECORD IS SEQUENCE.
01  SEQUENCE PIC 9(7).
FD  MSGFILE LABEL RECORD IS OMITTED
            DATA RECORD IS PRINT-LINE.
01  PRINT-LINE PIC X(80).
WORKING-STORAGE SECTION.
01  FIRST-TAPE.
    05  FILLER PIC X(67) VALUE IS SPACES.
    05  VOLUME-NAME PIC X(6).
    05  YEAR-STATE PIC X(52).
    05  TAPE-DATE.
        10  YEAR PIC XX.
        10  MO PIC XX.
        10  DAY PIC XX.
01  THIS-DATE.
    05  MO PIC XX.
    05  FILLER PIC X.
    05  DAY PIC XX.
    05  FILLER PIC X.
    05  YEAR PIC XX.
```

Figure 21: Source Listing of INIT (Cont)

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```
 PROCEDURE DIVISION.
     OPEN INPUT  CODELST CARDIN
          OUTPUT MSGFILE SEQNUMB FILE1 FILE2.
     READ CODELST AT END
       MOVE " *** ERROR ***  CODELST NOT PRESENT." TO PRINT-LINE
       GO TO STOP-RUN.
     READ CARDIN AT END
       MOVE " *** ERROR ***  VOLUME NAMES AND FIRST SEQUENCE NUMBE
-      "R NOT SPECIFIED." TO PRINT-LINE
       GO TO STOP-RUN.
     MOVE YEAR-STATE OF FIRST-REC TO YEAR-STATE OF FIRST-TAPE.
     MOVE CURRENT-DATE TO THIS-DATE.
     MOVE CORRESPONDING THIS-DATE TO TAPE-DATE.
     MOVE VOLUME-1 TO VOLUME-NAME.
     WRITE TAPE-REC1 FROM FIRST-TAPE.
     MOVE VOLUME-2 TO VOLUME-NAME.
     WRITE TAPE-REC2 FROM FIRST-TAPE.
     MOVE SEQ-NUMB TO SEQUENCE.
     WRITE SEQUENCE.
     CLOSE SEQNUMB CARDIN CODELST FILE1 FILE2.
     MOVE " NORMAL TERMINATION OF INITIATOR PROGRAM."
     TO PRINT-LINE.
 STOP-RUN.
     WRITE PRINT-LINE AFTER ADVANCING 1.
     STOP RUN.
```

Figure 21: Source Listing of INIT (Cont)

d. Records with severe errors are not written to the NEWSTU file. Those that are to be written out have the fields corresponding to the school, class, and occupation codes moved into the record. The run date is attached to the record so that the most recent record may be distinguished in case of duplication. Output may be batched prior to a single update run allowing the possibility of duplicate records.

e. A final summary containing the number of errors, warnings, and good records is given.

f. The SEQNUMB file is rewritten.

3. File Descriptions:

a. CODELST:

Refer to "Codes File" for a complete description of the codes file.

b. NEWSTU:

This output file contains the records which did not have any severe errors. Refer to "New Students File" for a complete description.

c. CARDIN:

This input file contains the enrollment cards. Refer to "Enrollment Form and Card" for a complete description.

d. OPSCAN:

This input file contains enrollment forms which have been placed on tape. For a detailed description and correspondence to the enrollment card see "Enrollment Form and Card."

e. SEQNUMB:

This is a 7 digit number that is read in at the beginning of the program. Each time a unique student number is needed it is incremented by 1 and moved to the student's SSN field (with '99' placed as the first two of the 9 digits). At program end it is rewritten so that in subsequent runs of TRANS no number will be repeated.

f. MSGFILE:

This output file lists the input records along with any error and warning messages. See "Enrollment Form Error Report" for details. In addition a summary is written on this file (see Figure 22).

4. Figure 23 is a Flow Chart of this program while Figure 24 is a program listing.

Program SORTER

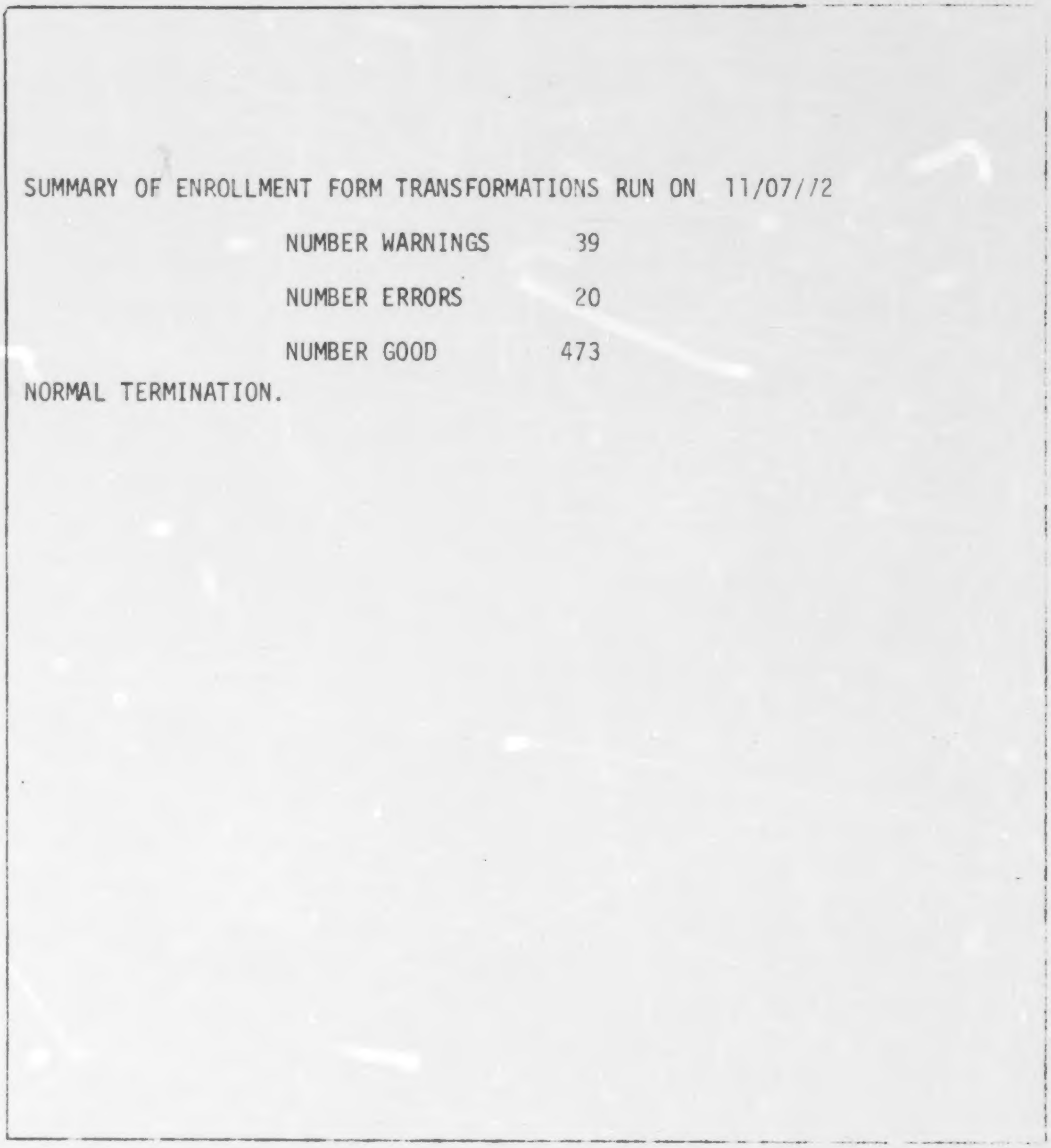
1. Purpose:

This program is designed to sort the output records of TRANS before being used to input to UPDATE. It also provides an opportunity to edit the input or output of the sort.

2. Program Operation:
   a. The process consists of running a sort routine which will produce an error message if there was a problem in the sort or a normal termination message if there were not problems. The sort is in ascending order for school name, class name, and student number and in descending order on run-date.
   b. The input procedure has a section that allows the user to insert the code necessary to do any data transformations and selections desired. Any transformations or selections on the class name, school name, or student number must be made in this section.
   c. The output procedure lists all header records (if more than one TRANS run is being sorted) and terminates with an error message if the headers differ in year or state. Only one header is passed on to the output file. This section also provides a place for inserting new program codes to perform transformations and selections on records.
   d. A summary of the number of records in, out, and headers deleted is printed. If any error was found the program terminates with a return code of 2000.
3. File Descriptions:
   a. SORTIN:

      This is the input file to the sort. Refer to "New Student File" for a complete description.
   b. SORTOUT:

      This is the output file of the sort. It is the input to the



```
SUMMARY OF ENROLLMENT FORM TRANSFORMATIONS RUN ON  11/07/72

                    NUMBER WARNINGS       39

                    NUMBER ERRORS         20

                    NUMBER GOOD          473
NORMAL TERMINATION.
```

Figure 22: Output Summary of MSGFILE

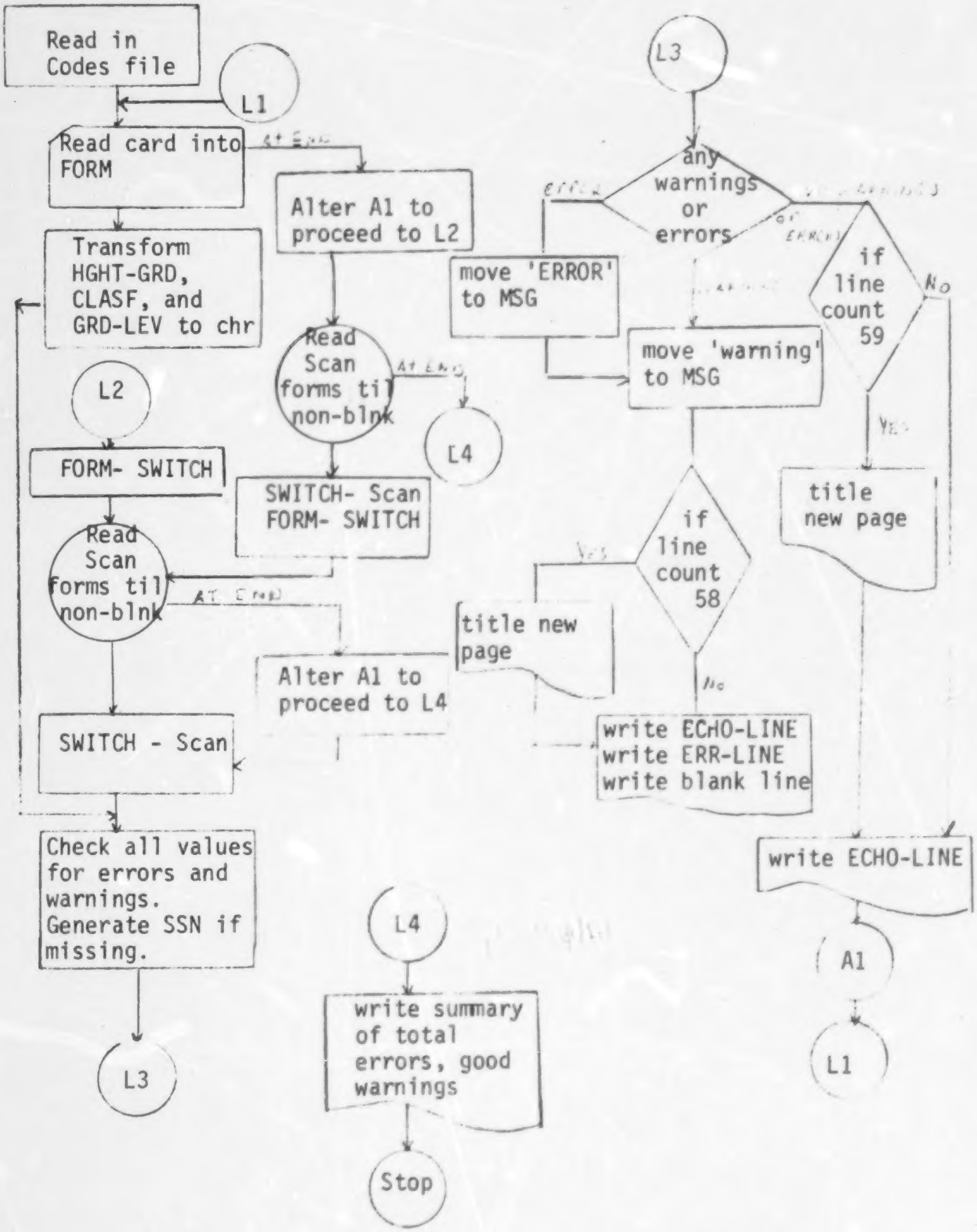


Figure 23: Flow Chart of TRANS

```
IDENTIFICATION DIVISION.
PROGRAM-ID.
    TRANS.
REMARKS.
    THIS IS THE PROGRAM THAT TAKES THE ENROLLEMENT FORMS
    PLACED ON TAPE BY THE OP-SCAN DEVICE, CHECKS FOR VALID
    ENTRIES, DECODES CERTAIN FIELDS, AND CREATES A FILE
    OF NEW STUDENTS TO BE ADDED TO THE MASTER FILE.
AUTHOR.
    JAMES S VANCE.
INSTALLATION.
    KANSAS STATE UNIVERSITY COMPUTING CENTER.



ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.
    IBM-360-H50.
OBJECT-COMPUTER.
    IBM-360-H50.
SPECIAL-NAMES.
    C01 IS NEWPAGE.


INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT CARDIN ASSIGN TO UT-S-CARDIN.
    SELECT OPSCAN ASSIGN TO UT-S-OPSCAN.
    SELECT NEWSTU ASSIGN TO UT-S-NEWSTU.
    SELECT CODELST ASSIGN TO UT-S-CODELST.
    SELECT SEQNUMB ASSIGN TO UT-S-SEQNUMB.
    SELECT MSGFILE ASSIGN TO UT-S-MSGFILE.



DATA DIVISION.
FILE SECTION.
FD  NEWSTU  LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 58 RECORDS
            RECORD CONTAINS 124 CHARACTERS
            DATA RECORD IS STUDENT-RCD.
```

Figure 24: Source Listing of TRANS

```
01  STUDENT-RCD.
    05  OCCUP-OBJ PIC X(15).
    05  SCHOOL PIC X(15).
    05  CLASS PIC X(15).
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC X.
        10  HIGHEST-GRD PIC X.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC XX.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE PIC X(6).
    05  PROG.
        10  CLASSIFICATION PIC X.
        10  GRADE-LEVEL PIC X.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE PIC XXX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
    05  RUN-DATE PIC X(8).
FD  CODELST LABEL RECORD IS OMITTED
            BLOCK CONTAINS 135 RECORDS
            RECORD CONTAINS 53 CHARACTERS
            DATA RECORD IS CODE-TBL.
01  CODE-TBL.
    05  TYPE-RCD PIC 9.
    05  FILLER PIC X.
    05  RCD-CODE PIC X(9).
    05  FILLER PIC 9.
    05  NAME PIC X(20).
    05  FILLER PIC X(21).
FD  SEQNUMB LABEL RECORD IS OMITTED
            DATA RECORD IS SEQUENCE.
01  SEQUENCE PIC 9(7).
```

Figure 24: Source Listing of TRANS (Cont)

```
FD  OPSCAN  LABEL RECORD IS OMITTED
            DATA RECORD IS SCAN-IN.
01  SCAN-IN.
    05  COL58 PIC X.
    05  COL62 PIC X.
    05  COL71 PIC X.
    05  COL57 PIC X.
    05  FILLER PIC XX.
    05  COL56 PIC X.
    05  COL61 PIC X.
    05  COL70 PIC X.
    05  COL55 PIC X.
    05  FILLER PIC XX.
    05  COL54 PIC X.
    05  COL69 PIC X.
    05  COL53 PIC X.
    05  FILLER PIC X.
    05  COL60 PIC X.
    05  COL68 PIC X.
    05  FILLER PIC XX.
    05  COL52 PIC X.
    05  COL51 PIC X.
    05  COL50 PIC X.
    05  COL67 PIC X.
    05  COL49 PIC X.
    05  FILLER PIC X.
    05  COL48 PIC X.
    05  COL66 PIC X.
    05  FILLER PIC XX.
    05  COL47 PIC X.
    05  COL65 PIC X.
    05  COL46 PIC X.
    05  FILLER PIC X.
    05  COL45 PIC X.
    05  COL44 PIC X.
    05  COL43 PIC X.
    05  COL59 PIC X.
    05  COL64 PIC X.
    05  COL42 PIC X.
    05  FILLER PIC XX.
    05  COL41 PIC X.
    05  COL63 PIC X.
    05  COL40 PIC X.
    05  FILLER PIC X.
    05  COL39 PIC X.
    05  FILLER PIC X.
    05  COL21 PIC X.
    05  FILLER PIC X.
```

Figure 24: Source Listing of TRANS (Cont)

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```
          05   COL22 PIC X.
          05   FILLER PIC X.
          05   COL38 PIC X.
          05   COL37 PIC X.
          05   COL36 PIC X.
          05   COL35 PIC X.
          05   COL34 PIC X.
          05   COL33 PIC X.
          05   COL32 PIC X.
          05   COL31 PIC X.
          05   COL30 PIC X.
          05   FILLER PIC X.
          05   COL20 PIC X.
          05   COL19 PIC X.
          05   COL18 PIC X.
          05   COL29 PIC X.
          05   COL17 PIC X.
          05   COL28 PIC X.
          05   COL16 PIC X.
          05   COL27 PIC X.
          05   COL15 PIC X.
          05   COL26 PIC X.
          05   COL14 PIC X.
          05   COL25 PIC X.
          05   COL13 PIC X.
          05   COL24 PIC X.
          05   COL12 PIC X.
          05   COL11 PIC X.
          05   COL10 PIC X.
          05   COL09 PIC X.
          05   COL08 PIC X.
          05   COL23 PIC X.
          05   COL07 PIC X.
          05   FILLER PIC X.
          05   COL06 PIC X.
          05   COL05 PIC X.
          05   COL04 PIC X.
          05   COL03 PIC X.
          05   COL02 PIC X.
          05   COL01 PIC X.
          05   FILLER PIC XX.
      66   SCAN-SHEET RENAMES COL58 OF SCAN-IN THRU COL01 OF SCAN-IN.
```

Figure 24: Source Listing of TRANS (Cont)

```
FD  CARDIN  LABEL RECORD IS OMITTED
            DATA RECORD IS SCAN-FORM.
01  SCAN-FORM.
    05  STUDENT.
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC X.
        10  HIGHEST-GRD PIC 9.
        10  SCAN-HIGHEST-GRD REDEFINES HIGHEST-GRD PIC X.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  MO.
                20  FIRST-CHAR PIC X.
                20  SECOND-CHAR PIC X.
            15  DAY PIC XX.
            15  YEAR PIC XX.
        10  NUMB PIC X(9).
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE PIC X(6).
    05  PROG.
        10  CLASSIFICATION PIC 9.
        10  SCAN-CLASSIFICATION REDEFINES CLASSIFICATION PIC X.
        10  GRADE-LEVEL PIC 9.
        10  SCAN-GRADE-LEVEL REDEFINES GRADE-LEVEL PIC X.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE PIC XXX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
66  ALL-BUT-FIRST RENAMES SECOND-CHAR IN SCAN-FORM THRU YEAR IN
    SCAN-FORM.
FD  MSGFILE LABEL RECORD IS OMMITED
            DATA RECORD IS PRINT-LINE.
01  PRINT-LINE PIC X(132).
```

Figure 24: Source Listing of TRANS (Cont)

```
WORKING-STORAGE SECTION.
     NUMB-GOOD PIC 9(8) COMP SYNC VALUE IS ZERO.
 77  NUMB-WARN PIC 9(8) COMP SYNC VALUE IS ZERO.
 77  NUMB-ERROR PIC 9(8) COMP SYNC VALUE IS ZERO.
 77  NUMB-OF-PAGES PIC 9(8) COMP SYNC VALUE IS 1.
 77  LINE-NUMB PIC 9(8) COMP SYNC.
 77  LOW PIC 9(8) COMP SYNC.
 77  HIGH PIC 9(8) COMP SYNC.
 77  MID-POINT PIC 9(8) COMP SYNC.
 77  NUMB-SCHOOL PIC 9(8) COMP SYNC VALUE IS ZERO.
 77  NUMB-OCCUP PIC 9(8) COMP SYNC VALUE IS ZERO.
 77  NUMB-CLASS PIC 9(8) COMP SYNC VALUE IS ZERO.
 77  ERROR-COUNT PIC 9(8) COMP SYNC VALUE IS 1.
 77  INDEX-NUMB PIC 9(8) COMP SYNC.
 77  LAST-SCHOOL PIC X(9) VALUE IS SPACES.
 77  LAST-CLASS PIC X(5) VALUE IS SPACES.
 77  BLANK-LINE PIC X(132) VALUE IS SPACES.
 77  TITLE-2 PIC X(132) VALUE IS "
     "       DIVISION OF VOCATIONAL EDUCATION".
 77  TITLE-3 PIC X(132) VALUE IS "
     "            STUDENT ACCOUNTING SYSTEM".
 77  TITLE-5 PIC X(132) VALUE IS " BLOCK:  1                       2
     "  3  4  5       6           7           8       9        10 11 1
     "2  13  14   15".
 01  TITLE-1.
     05  FILLER PIC X(31) VALUE IS SPACES.
     05  STATE PIC X(48).
     05  FILLER PIC X(53) VALUE IS SPACES.
 01  TITLE-4.
     05  FILLER PIC X(41) VALUE IS " ".
     05  FILLER PIC X(29) VALUE IS "ENROLLMENT FORM ERROR REPORT".
     05  FILLER PIC X(14) VALUE IS SPACES.
     05  DATE PIC X(8).
     05  FILLER PIC X(13) VALUE IS "        PAGE".
     05  PAGE-NUMB PIC ZZ9.
     05  FILLER PIC X(24) VALUE IS SPACES.
 01  SMRY-TITLE.
     05  FILLER PIC X(52) VALUE IS " SUMMARY OF ENROLLMENT FORM TR
         "ANSFORMATIONS RUN ON ".
     05  THIS-DATE PIC X(8).
     05  FILLER PIC X(72) VALUE IS SPACES.
```

Figure 24: Source Listing of TRANS (Cont)

```
01   SMRY-LINE.
     05   FILLER PIC X(20) VALUE IS SPACES.
     05   MSG PIC X(16).
     05   SMRY-NUMB PIC ZZZ,ZZ9.
     05   FILLER PIC X(89) VALUE IS SPACES.
01   TABLE.
     05   SCHOOL PIC X(15) OCCURS 300 TIMES.
     05   SCHOOL-CODE PIC X(9) OCCURS 300 TIMES.
     05   CLASS PIC X(15) OCCURS 1000 TIMES.
     05   CLASS-CODE PIC X(5) OCCURS 1000 TIMES.
     05   OCCUP-OBJ PIC X(15) OCCURS 500 TIMES.
     05   OCCUP-CODE PIC X(6) OCCURS 500 TIMES.
01   NEW-NUMB.
     05   FILLER PIC XX VALUE IS "99".
     05   SEQ-NUMB PIC 9(7).
01   SWITCH-COLS.
     05   COL01 PIC X.
     05   COL02 PIC X.
     05   COL03 PIC X.
     05   COL04 PIC X.
     05   COL05 PIC X.
     05   COL06 PIC X.
     05   COL07 PIC X.
     05   COL08 PIC X.
     05   COL09 PIC X.
     05   COL10 PIC X.
     05   COL11 PIC X.
     05   COL12 PIC X.
     05   COL13 PIC X.
     05   COL14 PIC X.
     05   COL15 PIC X.
     05   COL16 PIC X.
     05   COL17 PIC X.
     05   COL18 PIC X.
     05   COL19 PIC X.
     05   COL20 PIC X.
     05   COL21 PIC X.
     05   COL22 PIC X.
     05   COL23 PIC X.
     05   COL24 PIC X.
     05   COL25 PIC X.
     05   COL26 PIC X.
     05   COL27 PIC X.
     05   COL28 PIC X.
     05   COL29 PIC X.
     05   COL30 PIC X.
```

Figure 24: Source Listing of TRANS (Cont)

```
          05   COL31 PIC X.
          05   COL32 PIC X.
          05   COL33 PIC X.
          05   COL34 PIC X.
          05   COL35 PIC X.
          05   COL36 PIC X.
          05   COL37 PIC X.
          05   COL38 PIC X.
          05   COL39 PIC X.
          05   COL40 PIC X.
          05   COL41 PIC X.
          05   COL42 PIC X.
          05   COL43 PIC X.
          05   COL44 PIC X.
          05   COL45 PIC X.
          05   COL46 PIC X.
          05   COL47 PIC X.
          05   COL48 PIC X.
          05   COL49 PIC X.
          05   COL50 PIC X.
          05   COL51 PIC X.
          05   COL52 PIC X.
          05   COL53 PIC X.
          05   COL54 PIC X.
          05   COL55 PIC X.
          05   COL56 PIC X.
          05   COL57 PIC X.
          05   COL58 PIC X.
          05   COL59 PIC X.
          05   COL60 PIC X.
          05   COL61 PIC X.
          05   COL62 PIC X.
          05   COL63 PIC X.
          05   COL64 PIC X.
          05   COL65 PIC X.
          05   COL66 PIC X.
          05   COL67 PIC X.
          05   COL68 PIC X.
          05   COL69 PIC X.
          05   COL70 PIC X.
          05   COL71 PIC X.
      66   NEXT-SCHOOL RENAMES COL39 OF SWITCH-COLS THRU COL47 OF
           SWITCH-COLS.
      66   NEXT-CLASS RENAMES COL48 OF SWITCH-COLS THRU COL52 OF
           SWITCH-COLS.
```

Figure 24: Source Listing of TRANS (Cont)

```
01  ECHO-LINE.
    05  FILLER PIC X(9) VALUE IS " ".
    05  STUDENT.
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  RACE PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HGHST-GRADE PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  SEX PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  BIRTH-DATE.
            15  MO PIC XX.
            15  DAY PIC XX.
            15  YEAR PIC XX.
        10 FILLER PIC XX VALUE IS SPACES.
        10  NUMB PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  SCHOOL-CODE PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  CLASS-CODE PIC X(5).
    05  FILLER PIC XX VALUE IS SPACES.
    05  OCCUP-CODE PIC X(6).
    05  FILLER PIC XX VALUE IS SPACES.
    05  PROG.
        10  CLASE PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  GRADE-LEV PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HRS-OF-INSTR PIC XX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HOURLY-RATE PIC XXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
    05  FILLER PIC XX VALUE IS SPACES.
    05  ERROR-MSG PIC X(22).
```

Figure 24: Source Listing of TRANS (Cont)

```
01  ERR-LINE.
    05  FILLER PIC X(9) VALUE IS " ".
    05  STUDENT.
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  RACE PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HIGHEST-GRD PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  SEX PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  BIRTH-DATE.
            15  MO PIC XX.
            15  DAY PIC XX.
            15  YEAR PIC XX.
        10 FILLER PIC XX VALUE IS SPACES.
        10  NUMB PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  SCHOOL-CODE PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  CLASS-CODE PIC X(5).
    05  FILLER PIC XX VALUE IS SPACES.
    05  OCCUP-CODE PIC X(6).
    05  FILLER PIC XX VALUE IS SPACES.
    05  PROG.
        10  CLASSIFICATION PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  GRADE-LEVEL PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HRS-OF-INSTR PIC XX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HOURLY-RATE PIC XXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
    05  FILLER PIC X(24).
01  ID-REC.
    05  FILLER PIC X(64) VALUE IS SPACES.
    05  YEAR-STATE PIC X(52).
    05  HEAD-DATE PIC X(8).
```

Figure 24: Source Listing of TRANS (Cont)

```
01  FIRST-REC.
    05  FILLER PIC X.
    05  YEAR-STATE.
        10  YEAR PIC XXXX.
        10  STATE PIC X(48).
01  LTR-TBL.
    05  LETTER PIC X OCCURS 10 TIMES.




PROCEDURE DIVISION.
INITIALIZATIONS.
    OPEN INPUT  CODELST OPSCAN CARDIN SEQNUMB
         OUTPUT MSGFILE NEWSTU.
    READ SEQNUMB AT END
      MOVE " *** ERROR ***  SEQUENCE NUMBER FILE WAS NOT FOUND."
      TO PRINT-LINE
      WRITE PRINT-LINE AFTER ADVANCING 1
      GO TO STOP-RUN.
    READ CODELST INTO FIRST-REC AT END
      MOVE " *** ERROR *** CODES FILE DOES NOT EXIST." TO
      PRINT-LINE
      WRITE PRINT-LINE AFTER ADVANCING 1
      GO TO STOP-RUN.
    MOVE STATE IN FIRST-REC TO STATE IN TITLE-1.
    MOVE YEAR-STATE IN FIRST-REC TO YEAR-STATE IN ID-REC.
    MOVE SEQUENCE TO SEQ-NUMB.
    MOVE "ABCDEFGHIJ" TO LTR-TBL.
    MOVE CURRENT-DATE TO DATE THIS-DATE HEAD-DATE
    WRITE STUDENT-RCD FROM ID-REC.
    PERFORM PAGE-TITLEING.
READ-IN-CODE-TABLES.
    READ CODELST AT END GO TO PROCESS-CARDS.
    IF TYPE-RCD OF CODE-TBL IS EQUAL TO "1"
      ADD 1 TO NUMB-SCHOOL
      IF NUMB-SCHOOL IS GREATER THAN 300
        MOVE " *** ERROR ***  MORE THAN 300 SCHOOLS." TO
        PRINT-LINE
        WRITE PRINT-LINE AFTER ADVANCING 1
        GO TO STOP-RUN
      ELSE
        MOVE NAME OF CODE-TBL TO SCHOOL OF TABLE (NUMB-SCHOOL)
        MOVE RCD-CODE OF CODE-TBL TO SCHOOL-CODE
        OF TABLE (NUMB-SCHOOL)
    ELSE
      IF TYPE-RCD OF CODE-TBL IS EQUAL TO "2"
        ADD 1 TO NUMB-CLASS
        IF NUMB-CLASS IS GREATER THAN 1000
          MOVE " *** ERROR ***  MORE THAN 1000 CLASSES." TO
          PRINT-LINE
```

Figure 24: Source Listing of TRANS (Cont)

```
          WRITE PRINT-LINE AFTER ADVANCING 1
          GO TO STOP-RUN
        ELSE
          MOVE NAME OF CODE-TBL TO CLASS OF TABLE (NUMB-CLASS)
          MOVE RCD-CODE OF CODE-TBL TO CLASS-CODE
          OF TABLE (NUMB-CLASS)
      ELSE
        ADD 1 TO NUMB-OCCUP
        IF NUMB-OCCUP IS GREATER THAN 500
          MOVE " *** ERROR ***  MORE THAN 500 OCCUPATIONAL OBJECT
          "IVES." TO PRINT-LINE
          WRITE PRINT-LINE AFTER ADVANCING 1
          GO TO STOP-RUN
        ELSE
          MOVE NAME OF CODE-TBL TO OCCUP-OBJ OF
          TABLE (NUMB-OCCUP)
          MOVE RCD-CODE OF CODE-TBL TO OCCUP-CODE
          OF TABLE (NUMB-OCCUP).
    GO TO READ-IN-CODE-TABLES.


PROCESS-CARDS.
    READ CARDIN AT END
      ALTER LOOP-BACK TO PROCEED TO PROCESS-SCAN
            CLASS-CK-SWITCH TO PROCEED TO CHECK-LAST-NEXT-CLASS
            SCHOOL-CK-SWITCH TO PROCEED TO CHECK-LAST-NEXT-SCHOOL
      GO TO START-SCAN.
    TRANSFORM SCAN-HIGHEST-GRD CHARACTERS FROM
    "ABCDEFGHIJ" TO "0123456789".
    TRANSFORM SCAN-CLASSIFICATION CHARACTERS FROM
    "ABCDEFGHIJ" TO "0123456789".
    TRANSFORM SCAN-GRADE-LEVEL CHARACTERS FROM
    "ABCDEFGHIJ" TO "0123456789".
    GO TO CLEAR-ERRORS.

START-SCAN.
    READ OPSCAN AT END GO TO TERMINATE-PROGRAM.
    IF SCAN-SHEET IS EQUAL TO SPACES
      GO TO START-SCAN.
    MOVE CORRESPONDING SCAN-IN TO SWITCH-COLS.
    MOVE SWITCH-COLS TO SCAN-FORM.
    GO TO READ-RECORD.

PROCESS-SCAN.
    MOVE SCHOOL-CODE IN SCAN-FORM TO LAST-SCHOOL.
    MOVE CLASS-CODE IN SCAN-FORM TO LAST-CLASS.
    MOVE SWITCH-COLS TO SCAN-FORM.
```

Figure 24: Source Listing of TRANS (Cont)

```
READ-RECORD.
    READ OPSCAN AT END
      ALTER LOOP-BACK TO PROCEED TO TERMINATE-PROGRAM
      MOVE SPACES TO NEXT-SCHOOL NEXT-CLASS
      GO TO CLEAR-ERRORS.
    IF SCAN-SHEET IS EQUAL TO SPACES
      GO TO READ-RECORD.
    MOVE CORRESPONDING SCAN-IN TO SWITCH-COLS.

CLEAR-ERRORS.
    IF ERROR-COUNT IS GREATER THAN ZERO
      MOVE SPACES TO ERROR-MSG IN ECHO-LINE
      MOVE ZERO TO ERROR-COUNT
      MOVE SPACES TO ERR-LINE.
    MOVE CORRESPONDING SCAN-FORM TO ECHO-LINE.
    IF LAST-NAME OF STUDENT IN SCAN-FORM IS EQUAL TO ALL SPACES
      ADD 10 TO ERROR-COUNT
      MOVE ALL "*" TO LAST-NAME IN ERR-LINE.
    IF RACE OF STUDENT IN SCAN-FORM IS NOT NUMERIC
      ADD 1 TO ERROR-COUNT
      MOVE "-" TO RACE IN ERR-LINE.
    IF HIGHEST-GRD OF STUDENT IN SCAN-FORM IS NUMERIC
      ADD 1 HIGHEST-GRD OF STUDENT IN SCAN-FORM GIVING INDEX-NUMB
      MOVE LETTER (INDEX-NUMB) TO HGHST-GRADE OF STUDENT
      IN ECHO-LINE
    ELSE
      ADD 1 TO ERROR-COUNT
      MOVE HIGHEST-GRD IN SCAN-FORM TO HGHST-GRADE IN ECHO-LINE
      MOVE "-" TO HIGHEST-GRD OF STUDENT IN ERR-LINE.
    IF SEX OF STUDENT IN SCAN-FORM IS NOT EQUAL TO "1" AND "2"
      ADD 1 TO ERROR-COUNT
      MOVE "-" TO SEX IN ERR-LINE.
    IF BIRTH-DATE OF STUDENT IN SCAN-FORM IS NOT NUMERIC
      ADD 1 TO ERROR-COUNT
      IF ALL-BUT-FIRST IS NUMERIC
        MOVE ZERO TO FIRST-CHAR
        MOVE BIRTH-DATE IN SCAN-FORM TO BIRTH-DATE IN ERR-LINE
      ELSE
        MOVE ALL "-" TO BIRTH-DATE IN ERR-LINE.
    IF NUMB OF STUDENT IN SCAN-FORM IS EQUAL TO ALL SPACES
      ADD 1 TO SEQ-NUMB
      MOVE NEW-NUMB TO NUMB OF STUDENT IN SCAN-FORM
                       NUMB OF STUDENT IN ECHO-LINE.
    IF SCHOOL-CODE IN SCAN-FORM IS NOT NUMERIC
      GO TO INVALID-SCHOOL-CODE.
    MOVE 1 TO LOW.
    MOVE NUMB-SCHOOL TO HIGH.
```

Figure 24: Source Listing of TRANS (Cont)

```
CHECK-MID-POINT-FOR-SCHOOL.
     COMPUTE MID-POINT = (HIGH + LOW) / 2.
     IF SCHOOL-CODE IN TABLE (MID-POINT) IS LESS THAN SCHOOL-CODE
     IN SCAN-FORM
       ADD 1 MID-POINT GIVING LOW
     ELSE
       IF SCHOOL-CODE IN TABLE (MID-POINT) IS EQUAL TO SCHOOL-CODE
       IN SCAN-FORM
         GO TO SCHOOL-CODES-MATCH
       ELSE
         SUBTRACT 1 FROM MID-POINT GIVING HIGH.
     IF HIGH IS NOT LESS THAN LOW
       GO TO CHECK-MID-POINT-FOR-SCHOOL.

INVALID-SCHOOL-CODE.
     ADD 10 TO ERROR-COUNT.
     MOVE ALL "*" TO SCHOOL-CODE IN ERR-LINE.
     GO TO VERIFY-CLASS-CODE.

SCHOOL-CODES-MATCH.
     MOVE SCHOOL IN TABLE (MID-POINT) TO SCHOOL IN STUDENT-RCD.
SCHOOL-CK-SWITCH.
     GO TO VERIFY-CLASS-CODE.
CHECK-LAST-NEXT-SCHOOL.
     IF SCHOOL-CODE IN SCAN-FORM IS NOT EQUAL TO NEXT-SCHOOL AND
     LAST-SCHOOL
       ADD 1 TO ERROR-COUNT
       MOVE ALL "-" TO SCHOOL-CODE IN ERR-LINE.

VERIFY-CLASS-CODE.
     IF CLASS-CODE IN SCAN-FORM IS NOT NUMERIC
       GO TO INVALID-CLASS-CODE.
     MOVE 1 TO LOW.
     MOVE NUMB-CLASS TO HIGH.

CHECK-MID-POINT-FOR-CLASS.
     COMPUTE MID-POINT = (HIGH + LOW) / 2.
     IF CLASS-CODE IN TABLE (MID-POINT) IS LESS THAN CLASS-CODE
     IN SCAN-FORM
       ADD 1 MID-POINT GIVING LOW
     ELSE
       IF CLASS-CODE IN TABLE (MID-POINT) IS EQUAL TO CLASS-CODE
       IN SCAN-FORM
         GO TO CLASS-CODES-MATCH
       ELSE
         SUBTRACT 1 FROM MID-POINT GIVING HIGH.
     IF HIGH IS NOT LESS THAN LOW
       GO TO CHECK-MID-POINT-FOR-CLASS.
```

Figure 24: Source Listing of TRANS (Cont)

```
INVALID-CLASS-CODE.
     ADD 10 TO ERROR-COUNT.
     MOVE ALL "*" TO CLASS-CODE IN ERR-LINE.
     GO TO VERIFY-OCCUP-CODE.

CLASS-CODES-MATCH.
     MOVE CLASS IN TABLE (MID-POINT) TO CLASS IN STUDENT-RCD.
CLASS-CK-SWITCH.
     GO TO VERIFY-OCCUP-CODE.
CHECK-LAST-NEXT-CLASS.
     IF CLASS-CODE IN SCAN-FORM IS NOT EQUAL TO NEXT-CLASS AND
     LAST-CLASS
       ADD 1 TO ERROR-COUNT
       MOVE ALL "-" TO CLASS-CODE IN ERR-LINE.

VERIFY-OCCUP-CODE.
     IF OCCUP-CODE IN SCAN-FORM IS NOT NUMERIC
       GO TO INVALID-OCCUP-CODE.
     MOVE 1 TO LOW.
     MOVE NUMB-OCCUP TO HIGH.

CHECK-MID-POINT-FOR-OCCUP.
     COMPUTE MID-POINT = (HIGH + LOW) / 2.
     IF OCCUP-CODE IN TABLE (MID-POINT) IS LESS THAN OCCUP-CODE
     IN SCAN-FORM
       ADD 1 MID-POINT GIVING LOW
     ELSE
       IF OCCUP-CODE IN TABLE (MID-POINT) IS EQUAL TO OCCUP-CODE
       IN SCAN-FORM
         GO TO OCCUP-CODES-MATCH
       ELSE
         SUBTRACT 1 FROM MID-POINT GIVING HIGH.
     IF HIGH IS NOT LESS THAN LOW
       GO TO CHECK-MID-POINT-FOR-OCCUP.

INVALID-OCCUP-CODE.
     ADD 10 TO ERROR-COUNT.
     MOVE ALL "*" TO OCCUP-CODE IN ERR-LINE.
     GO TO CHECK-CLASSIFICATION.

OCCUP-CODES-MATCH.
     MOVE OCCUP-OBJ IN TABLE (MID-POINT) TO OCCUP-OBJ
     IN STUDENT-RCD.

CHECK-CLASSIFICATION.
     IF CLASSIFICATION OF PROG IN SCAN-FORM IS NUMERIC
       ADD 1 CLASSIFICATION OF PROG IN SCAN-FORM GIVING INDEX-NUMB
       MOVE LETTER (INDEX-NUMB) TO CLASS OF PROG IN ECHO-LINE
```

Figure 24: Source Listing of TRANS (Cont)

```
    ELSE
      ADD 1 TO ERROR-COUNT
      MOVE CLASSIFICATION OF PROG IN SCAN-FORM TO CLASE OF PROG
      IN ECHO-LINE
      MOVE "-" TO CLASSIFICATION IN ERR-LINE.
    IF GRADE-LEVEL OF PROG IN SCAN-FORM IS NUMERIC
      ADD 1 GRADE-LEVEL OF PROG IN SCAN-FORM GIVING INDEX-NUMB
      MOVE LETTER (INDEX-NUMB) TO GRADE-LEV OF PROG IN ECHO-LINE
    ELSE
      ADD 10 TO ERROR-COUNT
      MOVE GRADE-LEVEL OF PROG IN SCAN-FORM TO GRADE-LEV OF PROG
      IN ECHO-LINE
      MOVE "*" TO GRADE-LEVEL OF PROG IN ERR-LINE.
    IF HRS-OF-INSTR OF PROG IN SCAN-FORM IS NOT NUMERIC
      ADD 1 TO ERROR-COUNT
      MOVE ALL "-" TO HRS-OF-INSTR OF PROG IN ERR-LINE.
    IF CLASSIFICATION OF PROG IN SCAN-FORM IS NOT EQUAL TO
    "6" OR "7"
      GO TO CHECK-HANDICAPS.
    IF HRS-PER-WEEK OF COOP-ONLY IN SCAN-FORM IS NOT NUMERIC
      ADD 1 TO ERROR-COUNT
      MOVE ALL "-" TO HRS-PER-WEEK OF COOP-ONLY IN ERR-LINE.
    IF HOURLY-RATE OF COOP-ONLY IN SCAN-FORM IS NOT NUMERIC
      ADD 1 TO ERROR-COUNT
      MOVE ALL "-" TO HOURLY-RATE IN ERR-LINE.

CHECK-HANDICAPS.
    IF HANDICAP IN SCAN-FORM IS NOT NUMERIC
      ADD 1 TO ERROR-COUNT
      MOVE ALL "-" TO HANDICAP IN ERR-LINE.
    IF ERROR-COUNT IS GREATER THAN ZERO
      IF ERROR-COUNT IS GREATER THAN 9
        ADD 1 TO NUMB-ERROR
        MOVE "***  SEVERE ERROR  ***" TO ERROR-MSG
      ELSE
        ADD 1 TO NUMB-WARN
        MOVE "---  WARNING  ---" TO ERROR-MSG
    ELSE
      ADD 1 TO NUMB-GOOD.
    IF ERROR-COUNT IS GREATER THAN ZERO
      IF LINE-NUMB IS GREATER THAN 58
        PERFORM PAGE-TITLEING
      ELSE
        NEXT SENTENCE
    ELSE
      IF LINE-NUMB IS GREATER THAN 59
        PERFORM PAGE-TITLEING.
    WRITE PRINT-LINE FROM ECHO-LINE AFTER ADVANCING 1.
    ADD 1 TO LINE-NUMB.
```

Figure 24: Source Listing of TRANS (Cont)

```
    IF ERROR-COUNT IS GREATER THAN ZERO
      ADD 2 TO LINE-NUMB
      WRITE PRINT-LINE FROM ERR-LINE AFTER ADVANCING 1
      IF LINE-NUMB IS LESS THAN 60
        WRITE PRINT-LINE FROM BLANK-LINE AFTER ADVANCING 1
    IF ERROR-COUNT IS LESS THAN 10
      MOVE CORRESPONDING SCAN-FORM TO STUDENT-RCD
      MOVE THIS-DATE TO RUN-DATE
      WRITE STUDENT-RCD.
LOOP-BACK.
    GO TO PROCESS-CARDS.


PAGE-TITLEING.
    MOVE NUMB-OF-PAGES TO PAGE-NUMB.
    ADD 1 TO NUMB-OF-PAGES.
    WRITE PRINT-LINE FROM TITLE-1 AFTER ADVANCING NEWPAGE.
    WRITE PRINT-LINE FROM TITLE-2 AFTER ADVANCING 1.
    WRITE PRINT-LINE FROM TITLE-3 AFTER ADVANCING 1.
    WRITE PRINT-LINE FROM TITLE-4 AFTER ADVANCING 1.
    WRITE PRINT-LINE FROM TITLE-5 AFTER ADVANCING 2.
    WRITE PRINT-LINE FROM BLANK-LINE AFTER ADVANCING 1.
    MOVE 7 TO LINE-NUMB.


TERMINATE-PROGRAM.
    WRITE PRINT-LINE FROM SMRY-TITLE AFTER ADVANCING NEWPAGE.
    MOVE NUMB-WARN TO SMRY-NUMB.
    MOVE "NUMBER WARNINGS " TO MSG IN SMRY-LINE.
    WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    MOVE NUMB-ERROR TO SMRY-NUMB.
    MOVE "NUMBER ERRORS   " TO MSG IN SMRY-LINE.
    WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    MOVE NUMB-GOOD TO SMRY-NUMB.
    MOVE "NUMBER GOOD     " TO MSG IN SMRY-LINE.
    WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    CLOSE SEQNUMB.
    OPEN OUTPUT SEQNUMB.
    MOVE SEQ-NUMB TO SEQUENCE.
    WRITE SEQUENCE.
    MOVE " NORMAL TERMINATION." TO PRINT-LINE.
    WRITE PRINT-LINE AFTER ADVANCING 2.
    GO TO FINISH-RUN.
STOP-RUN.
    MOVE 2000 TO RETURN-CODE.
FINISH-RUN.
    CLOSE OPSCAN NEWSTU CODELST SEQNUMB MSGFILE CARDIN.
    STOP RUN.
```

Figure 24: Source Listing of TRANS (Cont)

UPDATE program. Refer to "sorted New Student File" for a complete description.

   c. MSGFILE:

      This file contains error messages and summary information.

   d. ERRFILE:

      If selections are being made by the user the record images are written on this file. This file is only opened if the user makes modifications to the program.

   e. SORTREC:

      This is the sort work area. The records released to it have the same format as SORTIN.

4. Figure 25 is a sample summary information page.
5. Because of the simplicity of this program, no flow chart is presented. Consult the program listing (Figure 26) for software description.

Program UPDATE

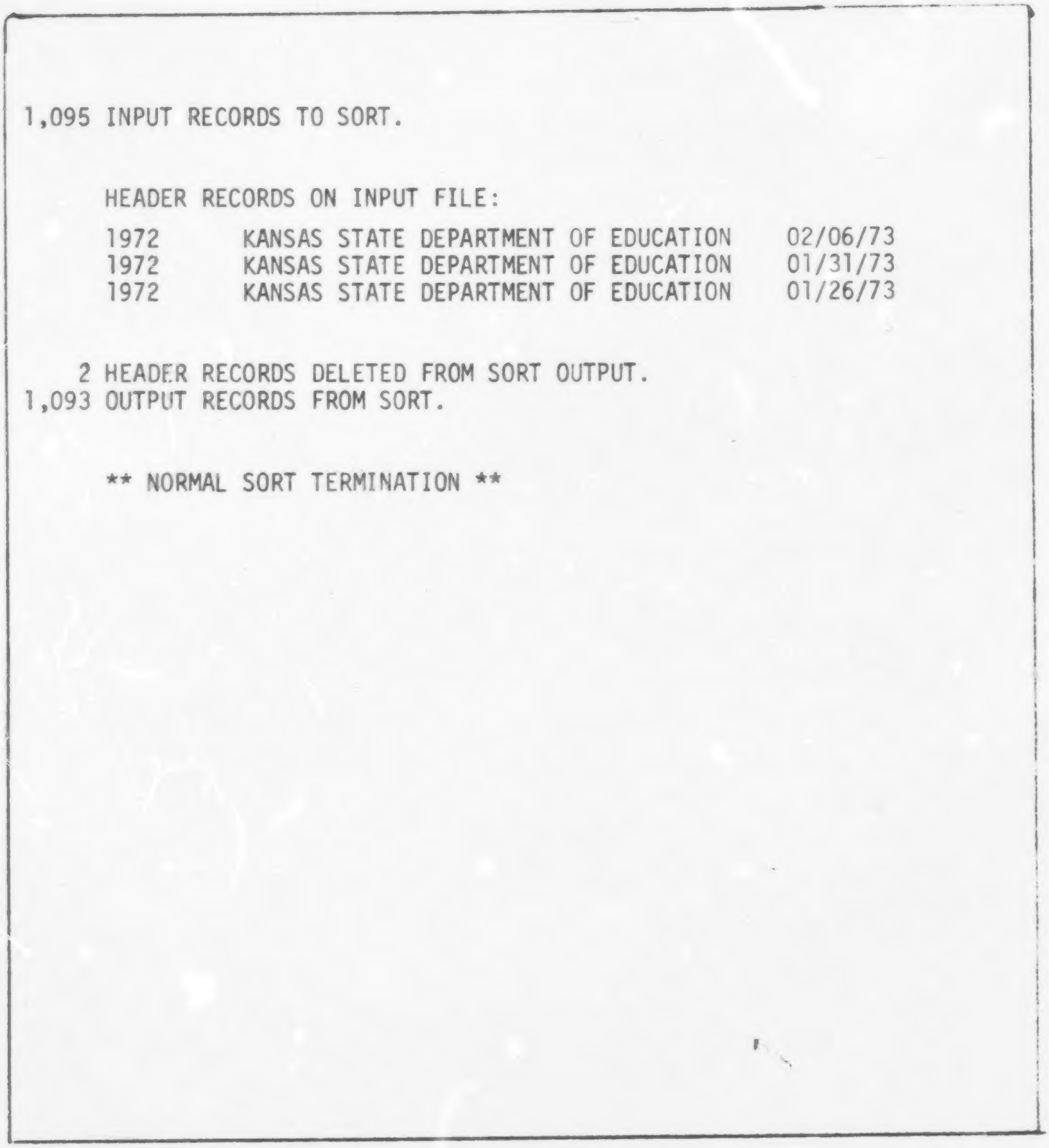
1. Purpose:

This program is designed to perform several functions:

   a. Take new records and merge them onto the master file.
   b. Print any class referenced by input records.
   c. Punch completion and placement cards for adults.
   d. Delete new and old records.
   e. Add completion, placement, and follow-up information into the student record.

2. Program Operation:

   a. The program begins by reading the old and new master file tape's first records and verifies that the run dates indicate that merging is going in the proper direction. If, for the purpose of rerunning the updating of a master tape, it is desired to have the dates direction reversed, a 'RELEASE FOR RERUN' (beginning in column 61) card must be included in the FLWDEL input file.
   b. Initially a record is read in from the follow-up/deletion, new student, and old master files. All three files are in



```
1,095 INPUT RECORDS TO SORT.


      HEADER RECORDS ON INPUT FILE:

      1972      KANSAS STATE DEPARTMENT OF EDUCATION    02/06/73
      1972      KANSAS STATE DEPARTMENT OF EDUCATION    01/31/73
      1972      KANSAS STATE DEPARTMENT OF EDUCATION    01/26/73


    2 HEADER RECORDS DELETED FROM SORT OUTPUT.
1,093 OUTPUT RECORDS FROM SORT.


      ** NORMAL SORT TERMINATION **
```

Figure 25: Summary Page for SORTER

```
IDENTIFICATION DIVISION.
PROGRAM-ID.
    SORTER.
REMARKS.
    THIS PROGRAM IS DESIGNED AS THE SORT BETWEEN THE OUTPUT
    OF TRANS AND THE INPUT TO UPDATE.  IT REMOVES ALL EXTRA
    HEADER RECORDS GENERATED BY MODING MORE THAN ONE OUTPUT
    FROM TRANS.  IT REMOVES ANY RECORDS WITH DUPLICATE SCHOOL,
    CLASS, AND STUDENT NUMBER.  BECAUSE RUN DATES ARE ON THE
    RECORDS ONLY THE MOST RECENT RECORD IS KEPT. THE PROGRAM
    ALSO ALLOWS ANY TRANSFORMATIONS AND SELECTIVE REMOVAL
    OF RECORDS FROM EITHER THE INPUT OR OUTPUT OF THE SORT.
AUTHOR.
    JAMES S VANCE.
INSTALLATION.
    KANSAS STATE UNIVERSITY COMPUTING CENTER.



ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.
    IBM-360-H50.
OBJECT-COMPUTER.
    IBM-360-H50.


INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT ERRFILE ASSIGN TO UT-S-ERRFILE.
    SELECT CARDIN  ASSIGN TO UT-S-CARDIN.
    SELECT MSGFILE ASSIGN TO UT-S-MSGFILE.
    SELECT SORTOUT ASSIGN TO UT-S-SORTOUT.
    SELECT SORTIN  ASSIGN TO UT-S-SORTIN.
    SELECT SORTREC ASSIGN TO UT-S-SORTREC.



DATA DIVISION.
FILE SECTION.
FD  CARDIN  LABEL RECORD IS OMITTED
            DATA RECORD IS PARM-CARD.
01  PARM-CARD.
    05  FILE-SIZE PIC 9(6).
    05  FILLER PIC X(74).
```

Figure 26: Source Listing of SORTER

```
FD  MSGFILE LABEL RECORD IS OMITTED
            DATA RECORD IS PRINT-LINE.
01  PRINT-LINE PIC X(133).
FD  ERRFILE LABEL RECORD IS OMMITED
            DATA RECORD IS ERR-RCD.
01  ERR-RCD PIC X(132).
SD  SORTREC DATA RECORD IS SORT-RECORD.
01  SORT-RECORD.
    05  OCCUP-OBJ PIC X(15).
    05  SCHOOL PIC X(15).
    05  CLASS PIC X(15).
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC X.
        10  HIGHEST-GRD PIC 9.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC XX.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE PIC X(6).
    05  PROG.
        10  CLASSIFICATION PIC 9.
        10  GRADE-LEVEL PIC 9.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE PIC XXX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
    05  RUN-DATE.
        10  SORT-MO-DAY PIC X(6).
        10  SORT-YEAR PIC XX.
66  HEADER-PART RENAMES LAST-NAME IN SORT-RECORD THRU RUN-DATE
    IN SORT-RECORD.
66  BLANK-PART RENAMES OCCUP-OBJ IN SORT-RECORD THRU NUMB IN
    SORT-RECORD.
66  THIS-HEADER RENAMES LAST-NAME IN SORT-RECORD THRU MENTAL IN
    SORT-RECORD.
66  SORT-REC-WO-DATE RENAMES OCCUP-OBJ IN SORT-RECORD THRU MENTAL
    IN SORT-RECORD.
66  SORT-KEY RENAMES SCHOOL IN SORT-RECORD THRU NUMB IN
    SORT-RECORD.
```

Figure 26: Source Listing of SORTER (Cont)

```
FD  SORTIN  LABEL RECORD IS MISSING
            BLOCK CONTAINS 58 RECORDS
            RECORD CONTAINS 124 CHARACTERS
            DATA RECORD IS INPUT-RECORD.
01  INPUT-RECORD.
    05  OCCUP-OBJ PIC X(15).
    05  SCHOOL PIC X(15).
    05  CLASS PIC X(15).
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC X.
        10  HIGHEST-GRD PIC X.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC XX.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE.
        10  FRST-CHRS PIC XX.
        10  MIDDLE-CHRS PIC XX.
        10  LST-CHR PIC X.
    05  OCCUP-CODE PIC X(6).
    05  PROG.
        10  CLASSIFICATION PIC X.
        10  GRADE-LEVEL PIC X.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE PIC XXX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
    05  RUN-DATE PIC X(8).
FD  SORTOUT LABEL RECORD IS MISSING
            BLOCK CONTAINS 60 RECORDS
            RECORD CONTAINS 116 CHARACTERS
            DATA RECORD IS OUTPUT-RECORD.
01  OUTPUT-RECORD.
    05  OCCUP-OBJ PIC X(15).
    05  SCHOOL PIC X(15).
    05  CLASS PIC X(15).
```

Figure 26: Source Listing of SORTER (Cont)

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```
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC X.
        10  HIGHEST-GRD PIC 9.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC XX.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE PIC X(6).
    05  PROG.
        10  CLASSIFICATION PIC 9.
        10  GRADE-LEVEL PIC 9.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE PIC XXX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
66  LAST-HEADER RENAMES LAST-NAME IN OUTPUT-RECORD THRU MENTAL
    IN OUTPUT-RECORD.
66  RECORD-KEY RENAMES SCHOOL IN OUTPUT-RECORD THRU NUMB IN
    OUTPUT-RECORD.


WORKING-STORAGE SECTION.
77  NUMB-RECORDS-IN PIC 9(8) COMP SYNC VALUE IS 1.
77  NUMB-RECORDS-OUT PIC 9(8) COMP SYNC VALUE IS 1.
77  NUMB-DELETE PIC 9(8) COMP SYNC VALUE IS ZERO.
77  NUMB-HEADERS PIC 9(8) COMP SYNC VALUE IS ZERO.
77  INDEX-NUMB PIC 9(8) COMP SYNC.
77  HEAD-ERROR PIC XXX VALUE IS "NO ".
77  TITLE-1 PIC X(108) VALUE IS "
-   "   LISTING OF DISCARD DUPLICATE RECORDS".
77  TITLE-2 PIC X(108) VALUE IS " BLOCK:  1                       2
-   "  3 4  5         6           7          8      9        10  11 1
-   "2  13  14   15".
```

Figure 26: Source Listing of SORTER (Cont)

```
01  ERR-STUDENT.
    05  FILLER PIC X(9) VALUE IS SPACES.
    05  STUDENT.
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  RACE PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HGHST-GRADE PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  SEX PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  BIRTH-DATE PIC X(6).
        10 FILLER PIC XX VALUE IS SPACES.
        10  NUMB PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  SCHOOL-CODE PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  CLASS-CODE PIC X(5).
    05  FILLER PIC XX VALUE IS SPACES.
    05  OCCUP-CODE PIC X(6).
    05  FILLER PIC XX VALUE IS SPACES.
    05  PROG.
        10  CLASE PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  GRADE-LEV PIC X.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HRS-OF-INSTR PIC XX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10 FILLER PIC XX VALUE IS SPACES.
        10  HOURLY-RATE PIC XXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
    05  FILLER PIC XX VALUE IS SPACES.
    05  MSG PIC X(20).
01  LTR-TBL.
    05  LETTER PIC X OCCURS 10 TIMES.
01  MSG-LINE.
    05  FILLER PIC X.
    05  NUMB PIC ZZZ,ZZ9.
    05  FILLER PIC XX VALUE IS SPACES.
    05  MSG PIC X(123).
```

Figure 26: Source Listing of SORTER (Cont)

```
PROCEDURE DIVISION.
    OPEN OUTPUT MSGFILE.
    MOVE 9[illegible] TO SORT-CORE-SIZE.
    SORT SORTREC
      ASCENDING KEY SORT-KEY
      DESCENDING KEY SORT-YEAR
      DESCENDING KEY SORT-MO-DAY
      INPUT PROCEDURE INPUT-TO-SORT
      OUTPUT PROCEDURE OUTPUT-FROM-SORT.
    IF SORT-RETURN IS NOT EQUAL TO ZERO
      MOVE "               *** ERROR ***  THERE WAS AN ERROR IN THE SO
      "RT PROCEEDURE." TO PRINT-LINE
      MOVE 2[illegible] TO RETURN-CODE
      GO TO STOP-RUN.
    MOVE "               ** NORMAL SORT TERMINATION **" TO
    PRINT-LINE,
 STOP-RUN.
    WRITE PRINT-LINE AFTER ADVANCING 3.
    CLOSE MSGFILE.
    STOP RUN.


 INPUT-TO-SORT SECTION.
    OPEN INPUT SORTIN.
    READ SORTIN AT END
      MOVE " *** ERROR ***  FILE HAS NO RECORDS." TO PRINT-LINE
      MOVE 2000 TO RETURN-CODE
      CLOSE SORTIN
      GO TO STOP-RUN.
    RELEASE SORT-RECORD FROM INPUT-RECORD.

 SCREEN-INPUT.
    READ SORTIN AT END GO TO INPUT-END.
    ADD 1 TO NUMB-RECORDS-IN.

    NOTE:
      STATEMENTS MAY BE PLACED HERE TO PERFORM TRANSFORMATIONS
      OR SELECTIONS ON THE INPUT RECORDS PRIOR TO BEING RELEASED
      FOR SORTING.

    IF FRST-CHRS IS EQUAL TO "17" AND LST-CHR IS EQUAL TO "4"
      MOVE "99" TO MIDDLE-CHRS
      MOVE "1" TO LST-CHR
      MOVE "COOP IND TRAIN " TO  CLASS IN INPUT-RECORD.
    MOVE INPUT-RECORD TO SORT-RECORD.
```

Figure 26: Source Listing of SORTER (Cont)

```
    NOTE:
      IT IS ASSUMED THAT ANY DESIRED CHANGES TO THE INPUT RECORD
      HAVE TAKEN PLACE AND THE RECORD TO BE RELEASED TO THE SORT
      INPUT IS IN THE DATA STRUCTURE "SORT-RECORD".

    RELEASE SORT-RECORD.
    GO TO SCREEN-INPUT.

INPUT-END.
    CLOSE SORTIN.
    MOVE NUMB-RECORDS-IN TO NUMB IN MSG-LINE.
    MOVE "INPUT RECORDS TO SORT." TO MSG IN MSG-LINE.
    WRITE PRINT-LINE FROM MSG-LINE AFTER ADVANCING 1.
INPUT-EXIT.
    EXIT.


OUTPUT-FROM-SORT SECTION.
    OPEN OUTPUT SORTOUT.
    RETURN SORTREC AT END GO TO OUTPUT-END.
    MOVE "          HEADER RECORDS ON INPUT FILE:" TO PRINT-LINE.
    WRITE PRINT-LINE AFTER ADVANCING 3.

SCREEN-HEADERS.
    MOVE HEADER-PART TO PRINT-LINE.
    WRITE PRINT-LINE AFTER ADVANCING 1.
    MOVE SORT-RECORD TO OUTPUT-RECORD.
    RETURN SORTREC AT END GO TO OUTPUT-END.
    IF BLANK-PART IS NOT EQUAL TO SPACES
      IF HEAD-ERROR IS EQUAL TO "YES"
        MOVE "          *** ERROR ***  THERE WERE CONFLICTS WITH
        "THE YEARS OR STATES IN THE ABOVE LISTED HEADER RECORDS."
        TO PRINT-LINE
        MOVE 2000 TO RETURN-CODE
        CLOSE SORTOUT
        GO TO STOP-RUN
      ELSE
        MOVE SPACES TO PRINT-LINE
        WRITE PRINT-LINE AFTER ADVANCING 2
        WRITE OUTPUT-RECORD
        IF NUMB-HEADERS IS GREATER THAN 1
          MOVE NUMB-HEADERS TO NUMB IN MSG-LINE
          MOVE "HEADER RECORDS DELETED FROM SORT OUTPUT." TO MSG
          IN MSG-LINE
          WRITE PRINT-LINE FROM MSG-LINE AFTER ADVANCING 1
          GO TO RETURN-RECORD
        ELSE
          GO TO RETURN-RECORD.
    IF THIS-HEADER IS NOT EQUAL TO LAST-HEADER
      MOVE "YES" TO HEAD-ERROR.
    ADD 1 TO NUMB-HEADERS.
    GO TO SCREEN-HEADERS.
```

Figure 26: Source Listing of SORTER (Cont)

```
SCREEN-OUTPUT.
    GO TO RETURN-RECORD.
RETURN-RECORD.
    MOVE SORT-RECORD TO OUTPUT-RECORD.
    RETURN SORTREC AT END
      ALTER SCREEN-OUTPUT TO PROCEED TO OUTPUT-END
      GO TO PROCESS-OUTPUT.
    IF SORT-KEY IS NOT EQUAL TO RECORD-KEY
      GO TO PROCESS-OUTPUT.

PROCESS-OUTPUT.
    GO TO WRITE-OUTPUT-RECORD.

    NOTE:
      STATEMENTS MAY BE PLACED IN FRONT OF THE ABOVE "GO TO"
      TO PERFORM TRANSFORMATIONS:  TO MAKE SELECTIONS ON THE
      RECORDS CHANGE THE "GO TO" TO ALLOW ALL DESIRED DELETIONS
      TO PASS THRU THIS POINT;  THE RECORD TO BE EDITED OR
      DELETED IS IN THE STRUCTURE "OUTPUT-RECORD" THE NEXT
      RECORD TO BE PROCESSED IS ALREADY IN THE STRUCTURE
      "SORT-RECORD".

TITLE-CK.
    GO TO TITLE-ERR.
TITLE-ERR.
    OPEN OUTPUT ERRFILE.
    WRITE ERR-RCD FROM TITLE-1 AFTER ADVANCING 1.
    WRITE ERR-RCD FROM TITLE-2 AFTER ADVANCING 1.
    MOVE SPACES TO ERR-RCD.
    WRITE ERR-RCD AFTER ADVANCING 1.
    MOVE "ABCDEFGHIJ" TO LTR-TBL.
    ALTER TITLE-CK TO PROCEED TO WRITE-ERR.
WRITE-ERR.
    MOVE CORRESPONDING OUTPUT-RECORD TO ERR-STUDENT,
    IF HIGHEST-GRD IN OUTPUT-RECORD IS NUMERIC
      ADD 1 HIGHEST-GRD IN OUTPUT-RECORD GIVING INDEX-NUMB
      MOVE LETTER (INDEX-NUMB) TO HGHST-GRADE IN ERR-STUDENT
    ELSE
      MOVE HIGHEST-GRD IN OUTPUT-RECORD TO HGHST-GRADE IN
      ERR-STUDENT.
    IF CLASSIFICATION IN OUTPUT-RECORD IS NUMERIC
      ADD 1 CLASSIFICATION IN OUTPUT-RECORD GIVING INDEX-NUMB
      MOVE LETTER (INDEX-NUMB) TO CLASE IN ERR-STUDENT
    ELSE
      MOVE CLASSIFICATION IN OUTPUT-RECORD TO CLASE IN
      ERR-STUDENT.
    IF GRADE-LEVEL IN OUTPUT-RECORD IS NUMERIC
      ADD 1 GRADE-LEVEL IN OUTPUT-RECORD GIVING INDEX-NUMB
      MOVE LETTER (INDEX-NUMB) TO GRADE-LEV IN ERR-STUDENT
```

Figure 26: Source Listing of SORTER (Cont)

```
        ELSE
          MOVE GRADE-LEVEL IN OUTPUT-RECORD TO GRADE-LEV IN
          ERR-STUDENT.
        WRITE ERR-RCD FROM ERR-STUDENT AFTER ADVANCING 1.
        ADD 1 TO NUMB-DELETE.
        GO TO SCREEN-OUTPUT.

    WRITE-OUTPUT-RECORD.
        WRITE OUTPUT-RECORD.
        ADD 1 TO NUMB-RECORDS-OUT.
        GO TO SCREEN-OUTPUT.

    OUTPUT-END.
        CLOSE SORTOUT.
        IF NUMB-DELETE IS NOT EQUAL TO ZERO
          CLOSE ERRFILE
          MOVE NUMB-DELETE TO NUMB IN MSG-LINE
          MOVE "STUDENT RECORDS DELETED." TO MSG IN MSG-LINE
          WRITE PRINT-LINE FROM MSG-LINE AFTER ADVANCING 1.
        MOVE NUMB-RECORDS-OUT TO NUMB IN MSG-LINE.
        MOVE "OUTPUT RECORDS FROM SORT." TO MSG IN MSG-LINE.
        WRITE PRINT-LINE FROM MSG-LINE AFTER ADVANCING 1.
    OUTPUT-EXIT.
        EXIT.
```

Figure 26: Source Listing of SORTER (Cont)

ascending order according to school name, class name, and student number order (these three elements being referred to as the key).

c. All records (both new and old) with keys corresponding to the key on a deletion card are deleted. The content of each deleted record is displayed on MSGFILE.

d. All classes referenced by records (new or replacement) are printed. A class is printed even if the only record referencing the class is deleted at the same time.

e. If there are records in the new student file that are duplicates, the first will be taken and the rest printed on MSGFILE and discarded. The sort step placed the most recent duplicate first because of the descending sort on the run.

f. New records with the same key as a record on the old file are treated as a replacement. An appropriate message is written on MSGFILE.

g. New records that are marked as adult and replacements for old records marked earlier as non-adults but now marked adult cause a completion card and initial placement card images to be written out.

h. Completion and follow-up information is only accepted for old master file records.

i. Follow-up/deletion cards with keys that don't match a student record are considered errors and a message to that effect is written to CARDMSG file.

j. A summary of all transactions is kept and printed on MSGFILE as the last part of UPDATE.

3. File Descriptions:

a. MSGFILE:

This is the error report, summary report, and replacement/deletion message file.

1) The summary report gives the following figures.

   a) The number of cards that were in error.

   b) The number of completion cards.

   c) The number of initial placement cards.

    d) The number of follow-up 1, 3 and 5 cards.
    e) The number of adults having cards punched.
    f) The number of duplicate records.
    g) The total number of deletions.
    h) The number of replaced records.
    i) The number of old student records.
    j) The number of new student records.
    k) The total number of records on the new file.

2) The replacement/deletion report indicates the action taken and lists the record image discarded. It is printed in the same block crder and in the same way as entered originally on the scan form.

b. CRDMSG:

The file contains card input error messages.

c. STULIST:

This file contains the class listings produced. See "Update Detail Listing" for a complete description.

d. PLCFILE:

This file contains placement card images for adults. The format of each record is:

Col 1-15	School name
Col 16-30	Class name
Col 31-39	Student number
Col 40-59	Student name
Col 60	The character '1'
Col 61-80	Blank

e. CMPFILE:

This file contains completion card images for adults. The record format is the same as PLCFILE except that column 60 has the character '0'.

f. OLDMAS

This is the old master file. Its complete description is in "Master File." Note that in each run the OLDMAS and NEWMAS files are exchanged.

g. NEWMAS

The new master file. Its construction is the same as OLDMAS.

h. FLWDEL

This file contains card input of several types. All cards (except 'rerun card') must be in ascending order by keys.

1) A rerun card. Must be first input card.

Cols 1-60	blank
Cols 61-77	'RELEASE FOR RERUN'
Cols 78-80	blank

2) A deletion card.

Cols 1-15	School name
Cols 16-30	Class name
Cols 31-39	Student number
Cols 40-59	Student name
Col 60	blank
Cols 61-66	'DELETE'
Cols 67-80	blank

3) Completion, initial placement, and follow-up 1, 3, and 5 cards. See "Completion Card" for detailed description.

4. There are several error report and summary pages. They are as follows:
    a. Figure 27 - An example of what the card error file would look like.
    b. Figure 28 - An example of the duplicate, replacement, and deletion message file.
    c. Figure 29 - An example of the summary page.

5. Figure 30 is a flow chart of UPDATE while Figure 31 is a program listing.

Program SUBSET

1. Purpose:

This program is designed to select a subset of the master file based on class and school criteria.

2. Program Operation:
    a. The program begins by reading in a parameter card and checking for the specified options.

```
                         KANSAS STATE DEPARTMENT OF EDUCATION
                          DIVISION OF VOCATIONAL EDUCATION
                             STUDENT ACCOUNTING SYSTEM

----MESSAGES ABOUT CARDS IN ERROR----   <--------------------------CARD IMAGE------------------------>

*** ERROR ***   INVALID TEST KEY.       WICHITA AVTS TCAR CON,REF   310020922              DELETE
*** ERROR ***   INVALID TEST KEY.       WICHITA AVTS TCAR CON,REF   550600428              DELETE
*** ERROR ***   INVALID TEST KEY.       WICHITA AVTS TCAR CON,REF   551625742              DELETE
```

Figure 27: Sample from Card Error File

```
                          KANSAS STATE DEPARTMENT OF EDUCATION
                           DIVISION OF VOCATIONAL EDUCATION
                              STUDENT ACCOUNTING SYSTEM

              /BLOCK
     MESSAGE/      1                 2 3 4 5     6         7          8     9       10 11 12 13 14 15

DELETED NEW RD:   WEST           P   8 F 2            515461333 806911003 14901 140700  J  I  4          0000

DELETED OLD RD:   HARPER        LB   2 E 1 102354 509640305 806911003 17211 171100  E  F 20          1120

DELETED OLD RD:   HAYDEN        RC   2 D 1 120655 509642865 806911003 17211 171100  E  E 10          1020

 DUPLICATE RCD:   RUSHE         TL   8 F 2 110825 514455955 806911003 17095 170500  J  I 04          0000

REPLACEMENT OF:   HOLMES       C A   8 F 2 013132 490342295 806911010 14901 140900  J  I 05          0000
           BY:    HOLMES        CA   8 F 2 013132 490342295 806911010 14901 140700  J  I 05          0000

 DUPLICATE RCD:   DIAZIA DIAZ  AAA   5 B 2 041259 990006556 806911010 14901 140900  J  I 05          0000
```

Figure 28: Example Duplicate, Replacement, and Deletion Message File

```
                         KANSAS STATE DEPARTMENT OF EDUCATION
                          DIVISION OF VOCATIONAL EDUCATION
                             STUDENT ACCOUNTING SYSTEM

        SUMMARY INFORMATION AS OF: 03/08/73      MOST CURRENT FILE ON TAPE VOLUME: 9350ED

      3 CARDS IN ERROR.

    480 DUPLICATE NEW STUDENT RECORDS.

     13 NEW STUDENT RECORDS DELETED.

     52 STUDENT RECORDS REPLACED.

 18,346 STUDENT RECORDS ON OLD FILE.

     10 OLD STUDENT RECORDS DELETED.

  1,380 STUDENT RECORDS ADDED TO FILE.

 19,716 TOTAL STUDENT RECORDS IN CURRENT FILE


        ** NORMAL TERMINATION **
```

Figure 29: Example Summary Page for UPDATE

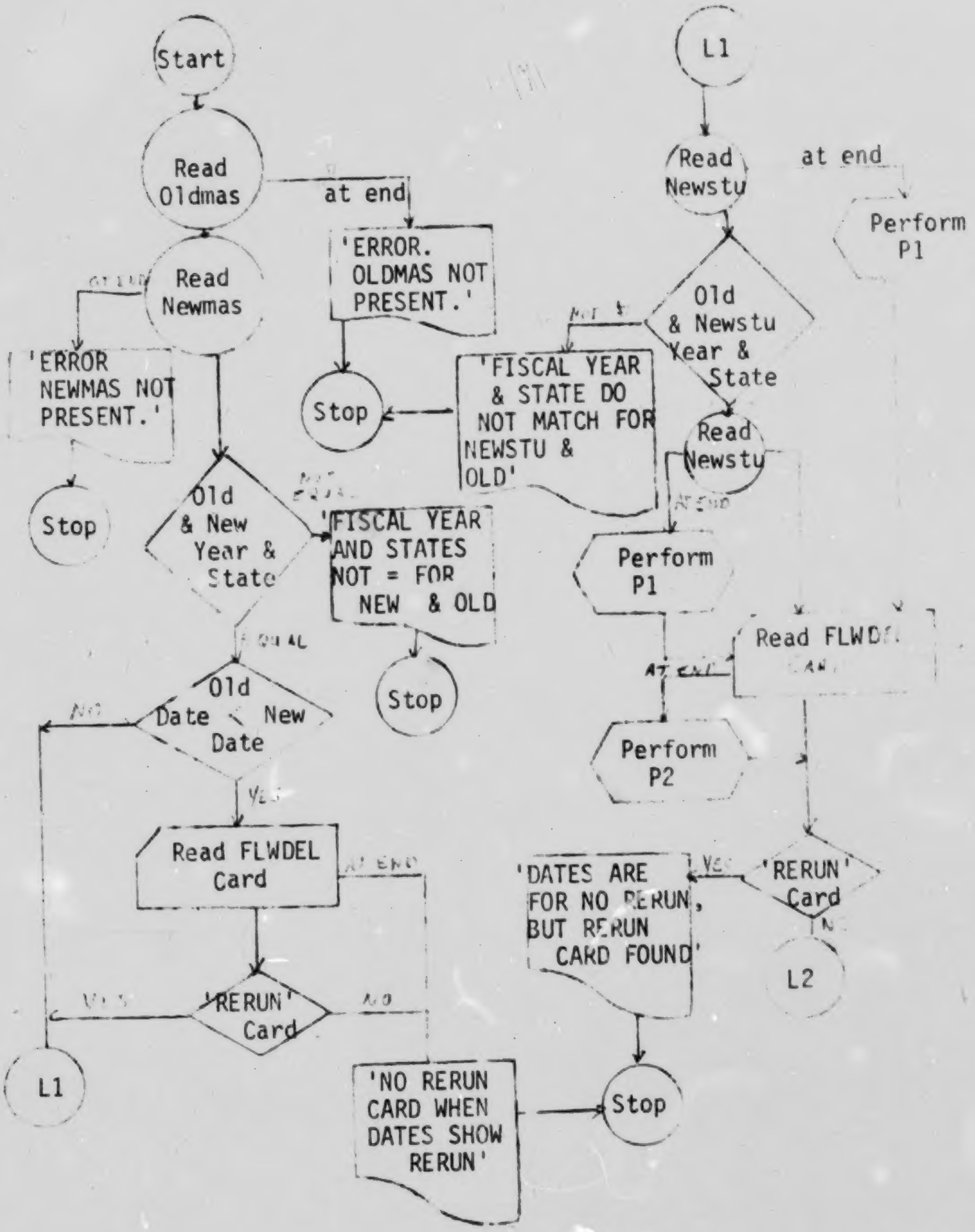


Figure 30: Flow Chart for UPDATE

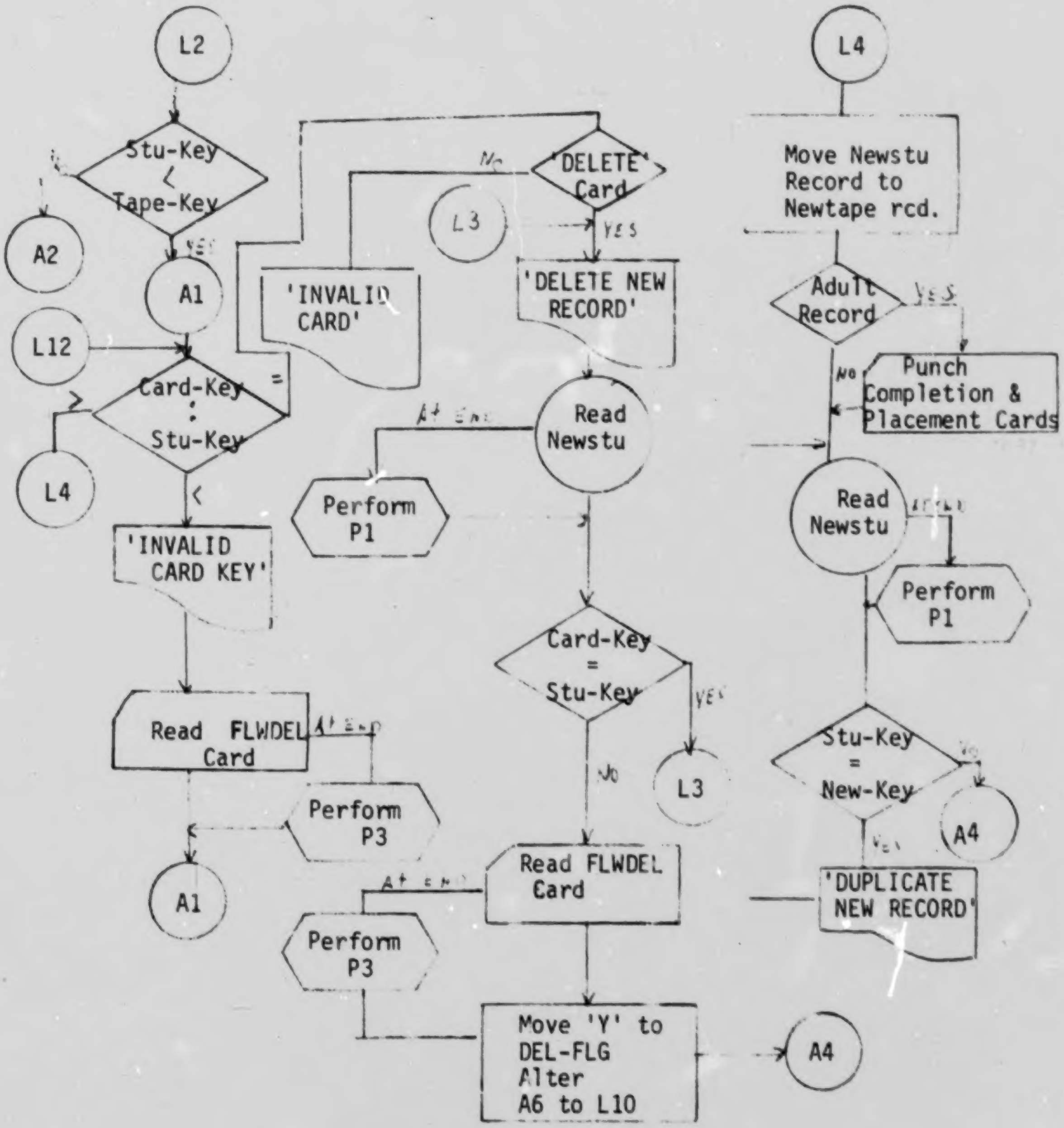
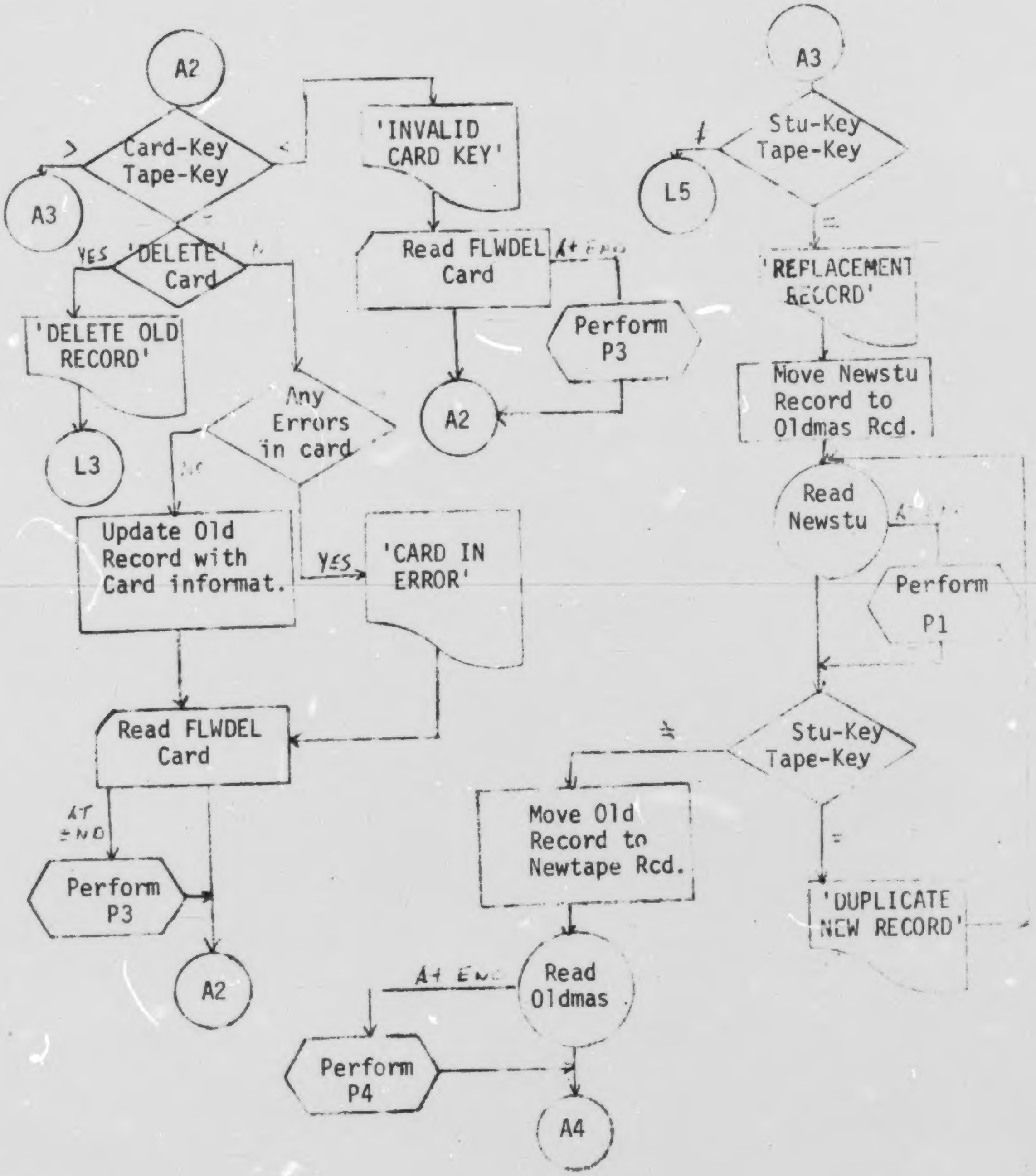
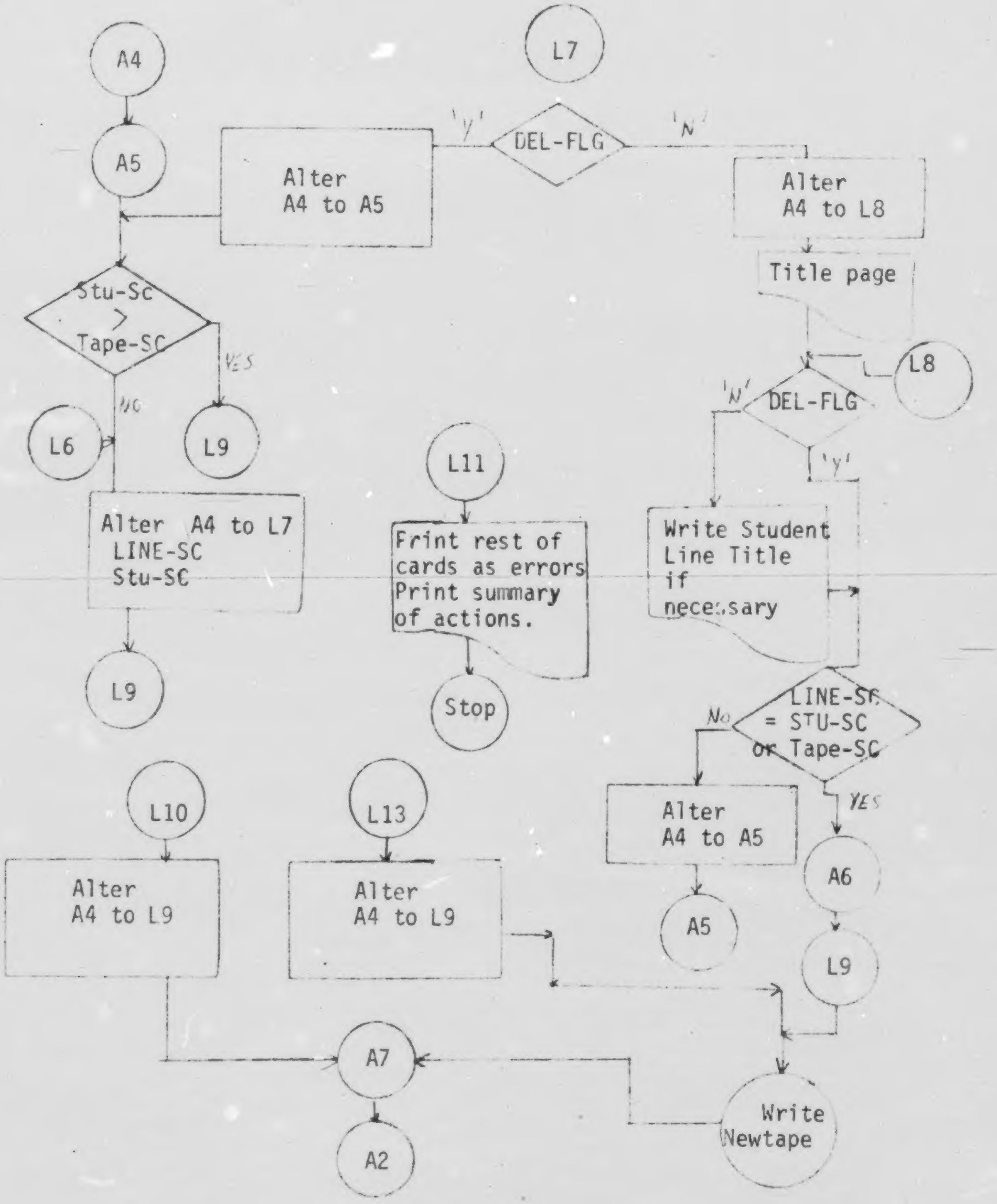


Figure 30: Flow Chart for UPDATE (Cont)



BEST COPY AVAILABLE

Figure 30: Flow Chart for UPDATE (Cont)



BEST COPY AVAILABLE

Figure 30: Flow Chart for UPDATE (Cont)

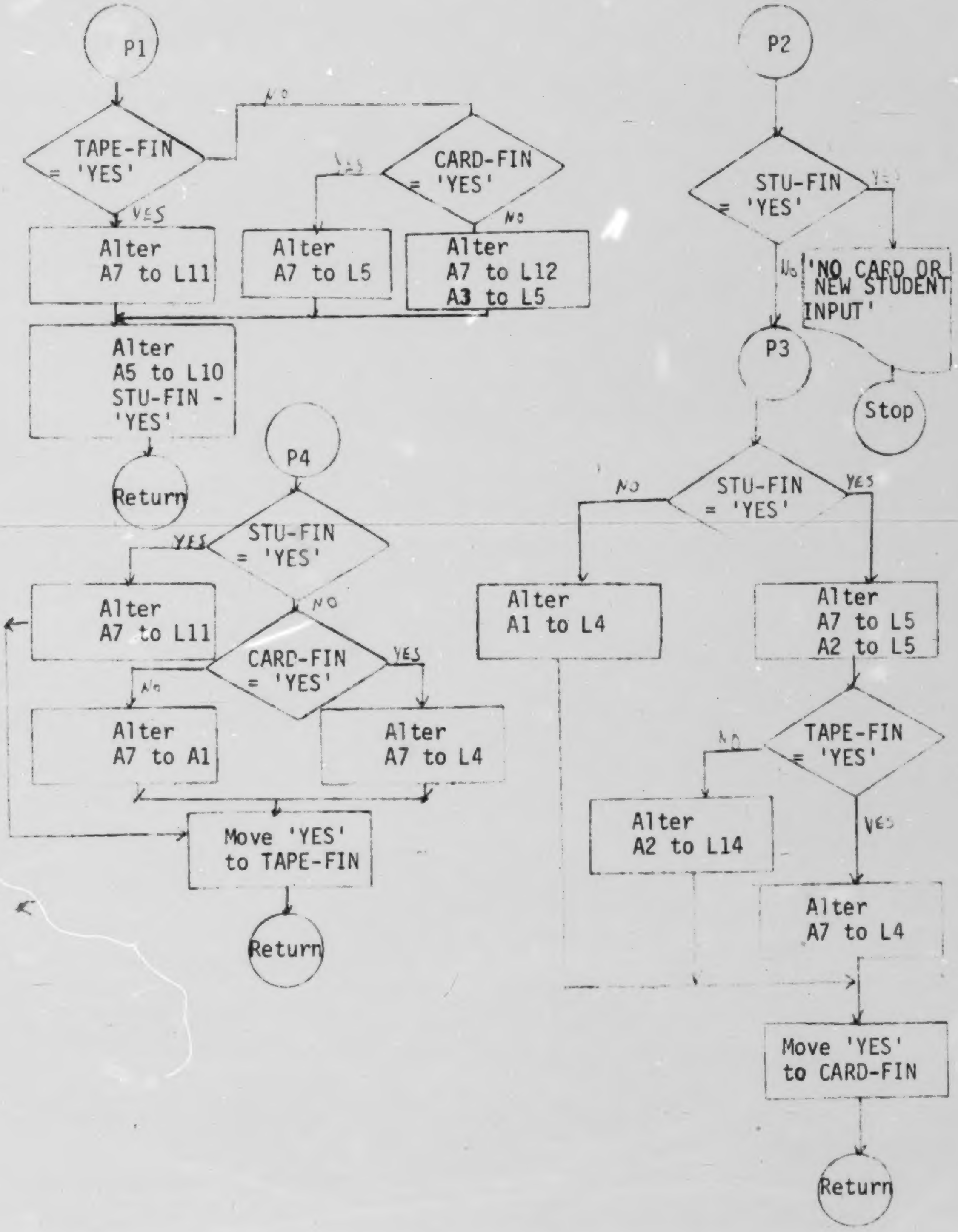


Figure 30: Flow Chart for UPDATE (Cont)

```
IDENTIFICATION DIVISION.
PROGRAM-ID.
    UPDATE.
REMARKS.
    THIS PROGRAM PERFORMS THE FOLLOWING FUNCTIONS:
        1)  MERGES NEW STUDENTS WITH OLD ONES ON MASTER TAPE.
        2)  REPLACES CORRECTED STUDENT RECORDS ON MASTER TAPE.
        3)  DELETES SELECTED RECORDS ON THE MASTER TAPE.
        4)  ADDS FOLLOW-UP INFORMATION TO THE MASTER TAPE.
        5)  PRINTS CLASSES WHICH HAVE NEW STUDENTS OR CHANGES
            OLD ONES.
        6)  PUNCHES COMPLETION AND PLACEMENT CARDS FOR ADULTS.

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ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.
    IBM-360-H50.
OBJECT-COMPUTER.
    IBM-360-H50.
SPECIAL-NAMES.
    C01 IS NEW-PAGE.


INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT PLCFILE ASSIGN TO UT-S-PLCFILE.
    SELECT CMPFILE ASSIGN TO UT-S-CMPFILE.
    SELECT CARDMSG ASSIGN TO UT-S-CARDMSG.
    SELECT MSGFILE ASSIGN TO UT-S-MSGFILE.
    SELECT STULIST ASSIGN TO UT-S-STULIST.
    SELECT OLDMAS  ASSIGN TO UT-S-OLDMAS.
    SELECT NEWMAS  ASSIGN TO UT-S-NEWMAS.
    SELECT FLWDEL  ASSIGN TO UT-S-FLWDEL.
    SELECT NEWSTU  ASSIGN TO UT-S-NEWSTU.
```

Figure 31: Source Listing of UPDATE

```
DATA DIVISION.
FILE SECTION.
FD  CMPFILE LABEL RECORD IS OMITTED
            BLOCK CONTAINS 91 RECORDS
            RECORD CONTAINS 80 CHARACTERS
            DATA RECORD IS COMPL-CARD.
01  COMPL-CARD PIC X(80).
FD  PLCFILE LABEL RECORD IS OMITTED
            BLOCK CONTAINS 91 RECORDS
            RECORD CONTAINS 80 CHARACTERS
            DATA RECORD IS PLCMNT-CARD.
01  PLCMNT-CARD PIC X(80).
FD  CARDMSG LABEL RECORD IS OMITTED
            DATA RECORD IS CARD-MSG.
01  CARD-MSG PIC X(126).
FD  MSGFILE LABEL RECORD IS OMITTED
            DATA RECORD IS PRINT-LINE.
01  PRINT-LINE PIC X(124).
FD  STULIST LABEL RECORD IS OMITTED
            DATA RECORD IS STUDENT-LISTING.
01  STUDENT-LISTING PIC X(131).
FD  FLWDFL  LABEL RECORD IS OMITTED
            DATA RECORD IS CARD-RCD.
01  CARD-RCD.
    05  CARD-KEY PIC X(39).
    05  FILLER PIC X(20).
    05  TYP-RCD PIC X.
    05  INFO.
        10  FRST PIC XX.
        10  SCND PIC X.
        10  FILLER PIC X(17).
FD  NEWSTU  LABEL RECORD IS OMITTED
            BLOCK CONTAINS 60 RECORDS
            RECORD CONTAINS 116 CHARACTERS
            DATA RECORD IS STUDENT-RCD.
01  STUDENT-RCD.
    05  OCCUP-OBJ PIC X(15).
    05  SCHOOL PIC X(15).
    05  CLASS PIC X(15).
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC X.
        10  HIGHEST-GRD PIC 9.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC XX.
            15  MO PIC XX.
            15  DAY PIC XX.
```

Figure 31: Source Listing of UPDATE (Cont)

```
   05 SCHOOL-CODE PIC X(9).
   05 CLASS-CODE PIC X(5).
   05 OCCUP-CODE PIC X(6).
   05 PROG.
      10 CLASSIFICATION PIC 9.
      10 GRADE-LEVEL PIC 9.
      10 HRS-OF-INSTR PIC XX.
   05 COOP-ONLY.
      10 HRS-PER-WEEK PIC XX.
      10 HOURLY-RATE PIC XXX.
   05 HANDICAP.
      10 ANY-KIND PIC X.
      10 DISADV PIC X.
      10 PHYSICAL PIC X.
      10 MENTAL PIC X.
66 STU-KEY RENAMES SCHOOL OF STUDENT-RCD THRU NUMB OF STUDENT
   IN STUDENT-RCD.
66 STU-SCH-CLS RENAMES SCHOOL OF STUDENT-RCD THRU CLASS OF
   STUDENT-RCD.
66 ADULT-KEY RENAMES SCHOOL OF STUDENT-RCD THRU M-INITIAL OF
   STUDENT IN STUDENT-RCD.
FD NEWMAS LABEL RECORDS ARE STANDARD
          BLOCK CONTAINS 55 RECORDS
          RECORD CONTAINS 131 CHARACTERS
          DATA RECORD IS NEW-TAPE.
01 NEW-TAPE.
   05 OCCUP-OBJ PIC X(15).
   05 SCHOOL PIC X(15).
   05 CLASS PIC X(15).
   05 STUDENT.
      10 NUMB PIC X(9).
      10 LAST-NAME PIC X(18).
      10 F-INITIAL PIC X.
      10 M-INITIAL PIC X.
      10 RACE PIC 9.
      10 HIGHEST-GRD PIC 9.
      10 SEX PIC X.
      10 BIRTH-DATE.
         15 YEAR PIC 99.
         15 MO PIC XX.
         15 DAY PIC XX.
   05 SCHOOL-CODE PIC X(9).
   05 CLASS-CODE PIC X(5).
   05 OCCUP-CODE PIC X(6).
   05 PROG.
      10 CLASSIFICATION PIC 9.
      10 GRADE-LEVEL PIC 9.
      10 HRS-OF-INSTR PIC XX.
```

Figure 31: Source Listing of UPDATE (Cont)

```
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE.
            15  DLRS PIC X.
            15  CENTS PIC XX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC 9.
        10  PHYSICAL PIC 9.
        10  MENTAL PIC 9.
    05  INFO.
        10  FLW-PLC-FLG PIC 9.
        10  COMPL PIC 99.
        10  PLCMNT-FLWUP OCCURS 4 TIMES.
            15  WORK-STAT PIC 99.
            15  SCHOOL-STAT PIC 9.
66  NEW-KEY RENAMES SCHOOL IN NEW-TAPE THRU NUMB IN NEW-TAPE.
66  NEW-STUDENT RENAMES OCCUP-OBJ OF NEW-TAPE THRU MENTAL OF
    NEW-TAPE.
66  TAPE-MO-DAY RENAMES MO OF NEW-TAPE THRU DAY OF NEW-TAPE.
FD  OLDMAS  LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 55 RECORDS
            RECORD CONTAINS 131 CHARACTERS
            DATA RECORD IS OLD-TAPE.
01  OLD-TAPE.
    05  OCCUP-OBJ PIC X(15).
    05  SCHOOL PIC X(15).
    05  CLASS PIC X(15).
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC X.
        10  HIGHEST-GRD PIC 9.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC XX.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE PIC X(6).
    05  PROG.
        10  CLASSIFICATION PIC 9.
        10  GRADE-LEVEL PIC 9.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE PIC XXX.
```

Figure 31: Source Listing of UPDATE (Cont)

```
        05  HANDICAP.
            10  ANY-KIND PIC X.
            10  DISADV PIC X.
            10  PHYSICAL PIC X.
            10  MENTAL PIC X.
        05  INFO.
            10  FLW-PLC-FLG PIC 9.
            10  COMPL PIC 99.
            10  PLCMNT-FLWUP OCCURS 4 TIMES.
                15  WORK-STAT PIC 99.
                15  SCHOOL-STAT PIC 9.
    66  OLD-STUDENT RENAMES OCCUP-OBJ OF OLD-TAPE THRU MENTAL OF
        OLD-TAPE.
    66  TAPE-KEY RENAMES SCHOOL IN OLD-TAPE THRU NUMB OF STUDENT IN
        OLD-TAPE.
    66  TAPE-SCH-CLS RENAMES SCHOOL IN OLD-TAPE THRU CLASS IN
        OLD-TAPE.


WORKING-STORAGE SECTION.
    77  TMP-NO PIC 9(8) COMP SYNC.
    77  LINE-NO PIC 9(8) COMP SYNC.
    77  PAGE-NUMB PIC 9(8) COMP SYNC VALUE IS 1.
    77  NUMB-ADULT PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-CARD-ERR PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-COMPLETE PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-STUDENTS PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-REPLACE PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-NEW-STU PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-OLD-STU PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-NEW-DELETE PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-OLD-DELETE PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  NUMB-DUPLICATE PIC 9(8) COMP SYNC VALUE IS ZERO.
    77  DELETE-FLAG PIC X VALUE IS "N".
    77  CARD-FIN PIC XXX VALUE IS "NO ".
    77  TAPE-FIN PIC XXX VALUE IS "NO ".
    77  STU-FIN PIC XXX VALUE IS "NO ".
    77  LINE-SCH-CLS PIC X(30) VALUE IS SPACES.
    77  CONT-CLASS PIC X(131) VALUE IS " (CONTINUED ON NEXT PAGE)".
    77  BLOCK1 PIC X(124) VALUE IS "                           /BLOCK".
    77  TITLE2 PIC X(131) VALUE IS "
        "                    DIVISION OF VOCATIONAL EDUCATION".
    77  TITLE3 PIC X(131) VALUE IS "
        "                        STUDENT ACCOUNTING SYSTEM".
    77  TITLE4 PIC X(131) VALUE IS "
        "                 DETAIL LISTING BY SCHOOL AND CLASS".
    77  TITLE9 PIC X(131) VALUE IS SPACES.
    01  TITLE1.
        05  FILLER PIC X(42) VALUE IS SPACES.
        05  STATE PIC X(48).
        05  FILLER PIC X(41) VALUE IS SPACES.
```

Figure 31: Source Listing of UPDATE (Cont)

```
01  TITLE5.
    05  FILLER PIC X(10) VALUE IS " SCHOOL:  ".
    05  SCHOOL PIC X(15).
    05  FILLER PIC X VALUE IS "(".
    05  SCHOOL-CODE PIC X(9).
    05  FILLER PIC X(27) VALUE IS ")".
    05  FILLER PIC XXXX VALUE IS "FOR ".
    05  PHY-YEAR PIC XXXX.
    05  FILLER PIC X(40) VALUE IS "
        "   RUN ON ".
    05  THIS-DATE.
        10  MO PIC XX.
        10  FILLER PIC X.
        10  DAY PIC XX.
        10  FILLER PIC X.
        10  YEAR PIC 99.
    05  FILLER PIC X(9) VALUE IS "    PAGE ".
    05  PAGE-NO PIC ZZZZ.
01  TITLE6.
    05  FILLER PIC X(10) VALUE IS "  CLASS:  ".
    05  CLASS PIC X(15).
    05  FILLER PIC X VALUE IS "(".
    05  CLASS-CODE PIC X(5).
    05  FILLER PIC X(100) VALUE IS ")".
01  TITLE7.
    05  FILLER PIC X(71) VALUE IS "
        "       OCCUPATIONAL-OBJECTIVE   DATE OF  H".
    05  FILLER PIC X(60) VALUE IS "GT                               -HANDICP
        "ANY  ----PROGRAM----  --COOP--".
01  TITLE8.
    05  FILLER PIC X(71) VALUE IS "      STUDENT NAME             NUM
        "BER          TITLE         CODE      BIRTH   G".
    05  FILLER PIC X(60) VALUE IS "DL  SEX  RACE  DISA  PHY MNT
        "PRB  CLS G/LV HR/INS  WAGE HRS".
01  BLOCK2.
    05  FILLER PIC X(62) VALUE IS "                    MESSAGE/    1
        "                 2  3  4  5      ".
    05  FILLER PIC X(62) VALUE IS "  6            7            8
        " 9        10 11 12  13  14   15  ".
01  CARD-TITLE.
    05  FILLER PIC X(46) VALUE IS "      ----MESSAGES ABOUT CARDS
        " IN ERROR----    ".
    05  FILLER PIC X(80) VALUE IS "<------------------------------
        "-----CARD IMAGE----------------------------------->".
01  ID-REC.
    05  FILLER PIC X(64).
    05  YEAR-STATE PIC X(52).
01  STRING01.
    05  STU-LEVS PIC XXX OCCURS 10 TIMES.
01  STRING02.
    05  RACES PIC XXXX OCCURS 9 TIMES.
```

Figure 31: Source Listing of UPDATE (Cont)

```
01   STRING03.
     05   DISADVS PIC XXXX OCCURS 10 TIMES.
01   STRING04.
     05   PHY-HNDYS PIC XX OCCURS 10 TIMES.
01   STRING05.
     05   MNT-HNDYS PIC XXX OCCURS 10 TIMES.
01   STRING06.
     05   CLASES PIC XXX OCCURS 10 TIMES.
01   STRING07.
     05   PROG-LEVS PIC XXX OCCURS 10 TIMES.
01   STRING08.
     05   LETTER PIC X OCCURS 10 TIMES.
01   THIS-MO-DAY.
     05   MO PIC XX.
     05   DAY PIC XX.
01   CNTR.
     05   NUMB-PLC-FLWUP PIC 9(8) COMP SYNC OCCURS 4 TIMES.
01   OLD-FIRST.
     05   FILLER PIC X(73).
     05   YEAR-STATE.
          10   YEAR PIC XXXX.
          10   STATE PIC X(48).
     05   OLD-DATE PIC X(6).
01   NEW-FIRST.
     05   FILLER PIC X(67).
     05   VOLUME-NAME PIC X(6).
     05   YEAR-STATE PIC X(52).
     05   NEW-DATE.
          10   YEAR PIC XX.
          10   MO PIC XX.
          10   DAY PIC XX.
01   SMRY-TITLE.
     05   FILLER PIC X(39) VALUE IS "              SUMARY INFORMATIO
     "N AS OF: ".
     05   T-DATE PIC X(8).
     05   FILLER PIC X(38) VALUE IS "    MOST CURRENT FILE ON TAPE
          "VOLUME: ".
     05   VOLUME-NAME PIC X(6).
     05   FILLER PIC X(26) VALUE IS SPACES.
01   SMRY-LINE.
     05   FILLER PIC X.
     05   NUMB PIC ZZ,ZZZ,ZZ9.
     05   FILLER PIC XX VALUE IS SPACES.
     05   MSG PIC X(40).
     05   FILLER PIC X(64) VALUE IS SPACES.
01   COMPL-RCD.
     05 COMPL-KEY PIC X(59).
     05   FILL PIC X(21) VALUE IS "0".
01   PLCMNT-RCD.
     05   PLCMNT-KEY PIC X(59).
     05   FILL PIC X(21) VALUE IS "1".
```

Figure 31: Source Listing of UPDATE (Cont)

```
01  CARD-ERR.
    05  FILLER PIC X(22) VALUE IS "      *** ERROR ***".
    05  MSG PIC X(24).
    05  CARD PIC X(80).
01  STU-MSG.
    05  FILLER PIC X(7) VALUE IS SPACES.
    05  MSG PIC X(15).
    05  FILLER PIC XXX VALUE IS SPACES.
    05  STUDENT.
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  FILLER PIC XX VALUE IS SPACES.
        10  RACE PIC X.
        10  FILLER PIC XX VALUE IS SPACES.
        10  HGHST-GRADE PIC X.
        10  FILLER PIC XX VALUE IS SPACES.
        10  SEX PIC X.
        10  FILLER PIC XX VALUE IS SPACES.
        10  BIRTH-DATE.
            15  MO PIC XX.
            15  DAY PIC XX.
            15  YEAR PIC XX.
        10  FILLER PIC XX VALUE IS SPACES.
        10  NUMB PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  SCHOOL-CODE PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  CLASS-CODE PIC X(5).
    05  FILLER PIC XX VALUE IS SPACES.
    05  OCCUP-CODE PIC X(6).
    05  FILLER PIC XX VALUE IS SPACES.
    05  PROG.
        10  CLASE PIC X.
        10  FILLER PIC XX VALUE IS SPACES.
        10  GRADE-LEV PIC X.
        10  FILLER PIC XX VALUE IS SPACES.
        10  HRS-OF-INSTR PIC XX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  FILLER PIC XX VALUE IS SPACES.
        10  HOURLY-RATE PIC XXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  MENTAL PIC X.
        10  PHYSICAL PIC X.
```

Figure 31: Source Listing of UPDATE (Cont)

```
01  OUTPUT-LINE.
    05  FILLER PIC X.
    05  STUDENT.
        10  F-INITIAL PIC X.
        10  FILLER PIC X VALUE IS SPACE.
        10  M-INITIAL PIC X.
        10  FILLER PIC X VALUE IS SPACE.
        10  LAST-NAME PIC X(18).
        10  FILLER PIC XX VALUE IS SPACES.
        10  NUMB PIC X(9).
    05  FILLER PIC XX VALUE IS SPACES.
    05  OCCUP-OBJ PIC X(15).
    05  FILLER PIC X VALUE IS SPACE.
    05  OCCUP-CODE PIC X(6).
    05  FILLER PIC XX VALUE IS SPACES.
    05  DATE-OF-BIRTH.
        10  MO PIC XX.
        10  FILLA PIC X.
        10  DAY PIC XX.
        10  FILLB PIC X.
        10  YEAR PIC XX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  HGT-GDL PIC XXX.
    05  FILLER PIC XXX VALUE IS SPACES.
    05  SEX PIC X.
    05  FILLER PIC XXX VALUE IS SPACES.
    05  RACE PIC XXXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  DISADV PIC XXXX.
    05  FILLER PIC XXX VALUE IS SPACES.
    05  PHY-HNDY PIC XX.
    05  FILLER PIC X VALUE IS SPACE.
    05  MNT-HNDY PIC XXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  ANY-PRB PIC XXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  PROG.
        10  CLASE PIC XXX.
        10  FILLER PIC XX VALUE IS SPACES.
        10  GRD-LEV PIC XXX.
        10  FILLER PIC XXX VALUE IS SPACES.
        10  HRS-OF-INSTR PIC XX.
   05  FILLER PIC XXXX VALUE IS SPACES.
   05  COOP-ONLY.
       10  HOURLY-RATE.
           15  DLRS PIC X.
           15  DEC-PT PIC X.
           15  CENTS PIC XX.
       10  FILLER PIC XX VALUE IS SPACES.
       10  HRS-PER-WEEK PIC XX.
```

Figure 31: Source Listing of UPDATE (Cont)

```
PROCEDURE DIVISION.
    OPEN INPUT  OLDMAS  NEWMAS  FLWDEL  NEWSTU
         OUTPUT MSGFILE CMPFILE PLCFILE STULIST CARDMSG.
    READ OLDMAS INTO OLD-FIRST AT END
      MOVE " *** TERMINAL ERROR ***  OLDMAS NOT PRESENT." TO
           PRINT-LINE
      GO TO STOP-RUN.
    READ NEWMAS INTO NEW-FIRST AT END
      MOVE " *** TERMINAL ERROR ***  NEWMAS NOT PRESENT." TO
           PRINT-LINE
      GO TO STOP-RUN.
    IF YEAR-STATE IN NEW-FIRST IS NOT EQUAL TO YEAR-STATE IN
    OLD-FIRST
      MOVE " *** TERMINAL ERROR ***  STATE AND YEAR NOT THE SAME
           "ON BOTH TAPES." TO PRINT-LINE
      GO TO STOP-RUN.
    IF OLD-DATE IS NOT LESS THAN NEW-DATE
      GO TO START-RUN.
    READ FLWDEL AT END GO TO RUN-ERROR.
    IF INFO IN CARD-RCD IS EQUAL TO "RELEASE FOR RERUN"
      MOVE SPACES TO CARD-RCD
      GO TO START-RUN.

RUN-ERROR.
    MOVE " *** TERMINAL ERROR ***  DATES ON OLD AND NEW MASTER TA
         "PES INDICATE A RERUN." TO PRINT-LINE.
    WRITE PRINT-LINE AFTER ADVANCING 1.
    MOVE " TO DO SO THE FIRST CARD IN THE FOLLOW-UP / DELETE FILE
         " MUST BE A 'RELEASE FOR RERUN' CARD." TO PRINT-LINE.
    GO TO STOP-RUN.

START-RUN.
    READ NEWSTU INTO ID-REC AT END
      PERFORM STU-END
      GO TO READ-FIRST-CARD.
    IF YEAR-STATE IN ID-REC IS NOT EQUAL TO YEAR-STATE IN
    OLD-FIRST
      MOVE " *** TERMINAL ERROR ***  YEAR AND STATE OF NEW STUDEN
      "T FILE DOES NOT CORRESPOND TO MASTER FILES." TO PRINT-LINE
      GO TO STOP-RUN.
    READ NEWSTU AT END PERFORM STU-END.
READ-FIRST-CARD.
    READ FLWDEL AT END PERFORM CARD-END-1 THRU CARD-END.
    IF INFO IN CARD-RCD IS EQUAL TO "RELEASE FOR RERUN"
      MOVE " *** TERMINAL ERROR ***  RERUN CARD PRESENT BUT DATES
           " ON TAPES INDICATE TAPES NOT SET UP FOR RERUN." TO
           PRINT-LINE
      GO TO STOP-RUN.
    READ OLDMAS AT END PERFORM TAPE-END.
    CLOSE NEWMAS.
    OPEN OUTPUT NEWMAS.
```

Figure 31: Source Listing of UPDATE (Cont)

BEST COPY AVAILABLE

```
    MOVE CURRENT-DATE TO THIS-DATE.
    MOVE CORRESPONDING THIS-DATE TO NEW-DATE.
    MOVE YEAR OF OLD-FIRST TO PHY-YEAR IN TITLE5.
    MOVE STATE OF OLD-FIRST TO STATE OF TITLE1.
    MOVE NEW-FIRST TO NEW-TAPE.
    MOVE ZERO TO NUMB-PLC-FLWUP (1).
    MOVE ZERO TO NUMB-PLC-FLWUP (2).
    MOVE ZERO TO NUMB-PLC-FLWUP (3).
    MOVE ZERO TO NUMB-PLC-FLWUP (4).
    MOVE " <77-8  9 10 11 12 13 14 15>15" TO STRING01.
    MOVE " INDAFROFLIPORNTCHNOSPANFORN CAU OTH" TO STRING02.
    MOVE "NONEECONACOMBOTH" TO STRING03.
    MOVE "NOHHDFSP VCP" TO STRING04.
    MOVE " NOTMREMR ED LDMUL" TO STRING05.
    MOVE "EXPGRGREMWKSPVCPPHCOBCOGAPROTH" TO STRING06.
    MOVE " <77-8  9 10 11 12FPHSPH AP AS" TO STRING07.
    MOVE "ABCDEFGHIJ" TO STRING08.
    MOVE MO OF TITLE5 TO MO OF THIS-MO-DAY.
    MOVE DAY OF TITLE5 TO DAY OF THIS-MO-DAY.
    GO TO PRINT-LINE-CK.


TEST-STU-TAPE-1.
    IF STU-KEY IS NOT LESS THAN TAPE-KEY
      GO TO CHECK-CARD.

CHECK-NEW-STU.
    GO TO TEST-CARD-STU.
TEST-CARD-STU.
    IF CARD-KEY IS LESS THAN STU-KEY
      MOVE "INVALID TEST KEY." TO MSG IN CARD-ERR
      PERFORM CARD-IN-ERROR THRU PRINT-CARD-MSG
    GO TO CHECK-NEW-STU.
    IF CARD-KEY IS GREATER THAN STU-KEY
      GO TO MOVE-NEW-STU.
    IF INFO IN CARD-RCD IS NOT EQUAL TO "DELETE"
      MOVE "INVALID CARD TYPE." TO MSG IN CARD-ERR
      PERFORM CARD-IN-ERROR THRU PRINT-CARD-MSG
      GO TO CHECK-NEW-STU.
DELETE-NEW-STU.
    MOVE "DELETED NEW RD:" TO MSG IN STU-MSG.

CONSTRUCT-NEW-MSG.
    GO TO TITLE-NEW-MSG.
TITLE-NEW-MSG.
    PERFORM TITLE-OLD-MSG.
MOVE-NEW-MSG.
    MOVE CORRESPONDING STUDENT-RCD TO STU-MSG.
    IF HIGHEST-GRD IN STUDENT-RCD IS NUMERIC
      ADD 1 HIGHEST-GRD IN STUDENT-RCD GIVING TMP-NO
      MOVE LETTER (TMP-NO) TO HGHST-GRADE IN STU-MSG
```

Figure 31: Source Listing of UPDATE (Cont)

```
      ELSE
        MOVE HIGHEST-GRD IN STUDENT-RCD TO HGHST-GRADE IN STU-MSG.
      IF CLASSIFICATION IN STUDENT-RCD IS NUMERIC
        ADD 1 CLASSIFICATION IN STUDENT-RCD GIVING TMP-NO
        MOVE LETTER (TMP-NO) TO CLASF IN STU-MSG
      ELSE
        MOVE CLASSIFICATION IN STUDENT-RCD TO CLASF IN STU-MSG.
      IF GRADE-LEVEL OF STUDENT-RCD IS NUMERIC
        ADD 1 GRADE-LEVEL IN STUDENT-RCD GIVING TMP-NO
        MOVE LETTER (TMP-NO) TO GRADE-LEV IN STU-MSG
      ELSE
        MOVE GRADE-LEVEL IN STUDENT-RCD TO GRADE-LEV IN STU-MSG.
      WRITE PRINT-LINE FROM STU-MSG AFTER ADVANCING 2.

END-MOVE-STU.
      ADD 1 TO NUMB-NEW-DELETE.
      READ NEWSTU AT END PERFORM STU-END.
CK-NEW-DELETE.
      IF STU-KEY IS EQUAL TO CARD-KEY
        GO TO DELETE-NEW-STU.
      READ FLWDEL AT END PERFORM CARD-END.
      MOVE "Y" TO DELETE-FLAG.
      ALTER WRITE-NEW-TAPE TO PROCEED TO DELETE-RECORD-SKIP.
      GO TO PRINT-LINE-CK.

MOVE-NEW-STU.
      ADD 1 TO NUMB-NEW-STU.
      MOVE STUDENT-RCD TO NEW-STUDENT.
      MOVE ZEROS TO INFO IN NEW-TAPE.
      IF GRADE-LEVEL OF PROG IN STUDENT-RCD IS GREATER THAN "7"
        MOVE ADULT-KEY TO COMPL-KEY PLCMNT-KEY
        ADD 1 TO NUMB-ADULT
        WRITE COMPL-CARD FROM COMPL-RCD
        WRITE PLCMNT-CARD FROM PLCMNT-RCD.
READ-NXT-STU.
      READ NEWSTU AT END PERFORM STU-END.
      IF NEW-KEY IS EQUAL TO STU-KEY
        MOVE " DUPLICATE RCD:" TO MSG IN STU-MSG
        PERFORM CONSTRUCT-NEW-MSG THRU MOVE-NEW-MSG
        ADD 1 TO NUMB-DUPLICATE
        GO TO READ-NXT-STU.
      GO TO PRINT-LINE-CK.


CARD-IN-ERROR.
      GO TO TITLE-CARD.
```

Figure 31: Source Listing of UPDATE (Cont)

```
TITLE-CARD.
    WRITE CARD-MSG FROM TITLE1 AFTER ADVANCING NEW-PAGE.
    WRITE CARD-MSG FROM TITLE2 AFTER ADVANCING 1.
    WRITE CARD-MSG FROM TITLE3 AFTER ADVANCING 1.
    WRITE CARD-MSG FROM CARD-TITLE AFTER ADVANCING 2.
    WRITE CARD-MSG FROM TITLE9 AFTER ADVANCING 2.
    ALTER CARD-IN-ERROR TO PROCEED TO PRINT-CARD-MSG.
PRINT-CARD-MSG.
    MOVE CARD-RCD TO CARD IN CARD-ERR.
    ADD 1 TO NUMB-CARD-ERR.
    WRITE CARD-MSG FROM CARD-ERR AFTER ADVANCING 1.
    READ FLWDEL AT END PERFORM CARD-END.

CHECK-CARD.
    GO TO TEST-CARD-TAPE.

TEST-CARD-TAPE.
    IF CARD-KEY IS LESS THAN TAPE-KEY
      MOVE "INVALID TEST KEY." TO MSG IN CARD-ERR
      GO TO CARD-IN-ERROR.
    IF CARD-KEY IS GREATER THAN TAPE-KEY
      GO TO END-CARD-TAPE.
    IF INFO IN CARD-RCD IS EQUAL TO "DELETE"
      GO TO DELETE-TAPE-RCD.
    IF TYP-RCD IN CARD-RCD IS GREATER THAN "4" OR LESS THAN "0"
      MOVE "INVALID CARD TYPE." TO MSG IN CARD-ERR
      GO TO CARD-IN-ERROR.
    IF TYP-RCD IN CARD-RCD IS EQUAL TO "0"
      IF FRST IN CARD-RCD IS LESS THAN "01" OR GREATER THAN "11"
        MOVE "INVALID COMPLEATION CODE." TO MSG IN CARD-ERR
        GO TO CARD-IN-ERROR
      ELSE
        ADD 1 TO NUMB-COMPLETE
        MOVE FRST IN CARD-RCD TO COMPL IN OLD-TAPE
        IF FRST IN CARD-RCD IS LESS THAN "04" OR EQUAL TO "07"
          MOVE "1" TO FLW-PLC-FLG IN OLD-TAPE
        ELSE
          MOVE "0" TO FLW-PLC-FLG IN OLD-TAPE
    ELSE
      MOVE TYP-RCD IN CARD-RCD TO TMP-NO
      IF FRST IN CARD-RCD IS LESS THAN "01" OR GREATER THAN "13"
        MOVE "INVALID WORK STATUS." TO MSG IN CARD-ERR
        GO TO CARD-IN-ERROR
      ELSE
        IF SCND IN CARD-RCD IS LESS THAN "1" OR GREATER THAN "6"
          MOVE "INVALID SCHOOL STATUS." TO MSG IN CARD-ERR
          GO TO CARD-IN-ERROR
```

Figure 31: Source Listing of UPDATE (Cont)

```
      ELSE
        ADD 1 TO NUMB-PLC-FLWUP (TMP-NO)
        MOVE INFO IN CARD-RCD TO PLCMNT-FLWUP IN
        OLD-TAPE (TMP-NO)
        IF FRST IN CARD-RCD IS EQUAL TO "04"
          MOVE "0" TO FLW-PLC-FLG IN OLD-TAPE.
   READ FLWDEL AT END PERFORM CARD-END.
   GO TO CHECK-CARD.


DELETE-TAPE-RCD.
   ADD 1 TO NUMB-OLD-DELETE.
   MOVE "DELETED OLD RD:" TO MSG IN STU-MSG.
CONSTRUCT-OLD-MSG.
   GO TO TITLE-OLD-MSG.
TITLE-OLD-MSG.
   WRITE PRINT-LINE FROM TITLE1 AFTER ADVANCING NEW-PAGE.
   WRITE PRINT-LINE FROM TITLE2 AFTER ADVANCING 1.
   WRITE PRINT-LINE FROM TITLE3 AFTER ADVANCING 1.
   WRITE PRINT-LINE FROM BLOCK1 AFTER ADVANCING 2.
   WRITE PRINT-LINE FROM BLOCK2 AFTER ADVANCING 1.
   WRITE PRINT-LINE FROM TITLE9 AFTER ADVANCING 2.
   ALTER CONSTRUCT-OLD-MSG TO PROCEED TO MOVE-OLD-MSG
         CONSTRUCT-NEW-MSG TO PROCEED TO MOVE-NEW-MSG.
MOVE-OLD-MSG.
   MOVE CORRESPONDING OLD-TAPE TO STU-MSG.
   IF HIGHEST-GRD OF STUDENT IN OLD-TAPE IS NUMERIC
     ADD 1 HIGHEST-GRD IN OLD-TAPE GIVING TMP-NO
     MOVE LETTER (TMP-NO) TO HGHST-GRADE OF STUDENT IN STU-MSG
   ELSE
     MOVE HIGHEST-GRD IN OLD-TAPE TO HGHST-GRADE IN STU-MSG.
   IF CLASSIFICATION IN OLD-TAPE IS NUMERIC
     ADD 1 CLASSIFICATION IN OLD-TAPE GIVING TMP-NO
     MOVE LETTER (TMP-NO) TO CLASF IN STU-MSG
   ELSE
     MOVE CLASSIFICATION IN OLD-TAPE TO CLASF IN STU-MSG.
   IF GRADE-LEVEL IN OLD-TAPE IS NUMERIC
     ADD 1 GRADE-LEVEL IN OLD-TAPE GIVING TMP-NO
     MOVE LETTER (TMP-NO) TO GRADE-LEV IN STU-MSG
   ELSE
     MOVE GRADE-LEVEL IN OLD-TAPE TO GRADE-LEV IN STU-MSG.

END-DELETE.
   WRITE PRINT-LINE FROM STU-MSG AFTER ADVANCING 2.
   READ OLDMAS AT END PERFORM TAPE-END.
   ADD 1 TO NUMB-OLD-STU.
   GO TO CK-NEW-DELETE.


END-CARD-TAPE.
   GO TO TEST-STU-TAPE-2.
```

Figure 31: Source Listing of UPDATE (Cont)

```
TEST-STU-TAPE-2.
    IF STU-KEY IS NOT EQUAL TO TAPE-KEY
      GO TO MOVE-OLD-TAPE.
    ADD 1 TO NUMB-REPLACE.
    MOVE "REPLACEMENT OF:" TO MSG IN STU-MSG.
    PERFORM CONSTRUCT-OLD-MSG THRU MOVE-OLD-MSG.
    WRITE PRINT-LINE FROM STU-MSG AFTER ADVANCING 2.
    IF GRADE-LEVEL OF PROG IN STUDENT-RCD IS GREATER THAN "7"
      IF GRADE-LEVEL OF PROG IN OLD-TAPE IS LESS THAN "8"
        ADD 1 TO NUMB-ADULT
        MOVE ADULT-KEY TO COMPL-KEY PLCMNT-KEY
        WRITE COMPL-CARD FROM COMPL-RCD
        WRITE PLCMNT-CARD FROM PLCMNT-RCD.
    MOVE STUDENT-RCD TO OLD-STUDENT.
    MOVE "              BY:" TO MSG IN STU-MSG.
    PERFORM CONSTRUCT-OLD-MSG THRU MOVE-OLD-MSG.
    WRITE PRINT-LINE FROM STU-MSG AFTER ADVANCING 1.
READ-NXT-STU-2.
    READ NEWSTU AT END PERFORM STU-END.
    IF TAPE-KEY IS EQUAL TO STU-KEY
      MOVE " DUPLICATE RCD:" TO MSG IN STU-MSG
      PERFORM CONSTRUCT-NEW-MSG THRU MOVE-NEW-MSG
      ADD 1 TO NUMB-DUPLICATE
      GO TO READ-NXT-STU-2.


MOVE-OLD-TAPE.
    MOVE OLD-TAPE TO NEW-TAPE.
    READ OLDMAS AT END PERFORM TAPE-END.
    ADD 1 TO NUMB-OLD-STU.


PRINT-LINE-CK.
    GO TO END-ALTER-CK.
END-ALTER-CK.
    GO TO CHECK-STU-TAPE-SC.
END-ALTER-TAPE.
    ALTER PRINT-LINE-CK TO PROCEED TO WRITE-NEW-TAPE.
    GO TO WRITE-NEW-TAPE.
CHECK-STU-TAPE-SC.
    IF STU-SCH-CLS IS GREATER THAN TAPE-SCH-CLS
      GO TO WRITE-NEW-TAPE.
END-ALTER-STU.
    ALTER PRINT-LINE-CK TO PROCEED TO PRINT-TITLE.
    MOVE STU-SCH-CLS TO LINE-SCH-CLS.
    GO TO WRITE-NEW-TAPE.
PRINT-TITLE.
    IF DELETE-FLAG IS EQUAL TO "Y"
      ALTER PRINT-LINE-CK TO PROCEED TO END-ALTER-CK
      GO TO CHECK-STU-TAPE-SC.
```

Figure 31: Source Listing of UPDATE (Cont)

```
    ALTER PRINT-LINE-CK TO PROCEED TO PRINT-INDIVIDUAL.
    MOVE SCHOOL IN NEW-TAPE TO SCHOOL IN TITLE5.
    MOVE SCHOOL-CODE IN NEW-TAPE TO SCHOOL-CODE IN TITLE5.
    MOVE CLASS IN NEW-TAPE TO CLASS IN TITLE6.
    MOVE CLASS-CODE IN NEW-TAPE TO CLASS-CODE IN TITLE6.
WRITE-TITLE.
    MOVE PAGE-NUMB TO PAGE-NO.
    ADD 1 TO PAGE-NUMB.
    WRITE STUDENT-LISTING FROM TITLE1 AFTER ADVANCING NEW-PAGE.
    WRITE STUDENT-LISTING FROM TITLE2 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE3 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE4 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE5 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE6 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE7 AFTER ADVANCING 2.
    WRITE STUDENT-LISTING FROM TITLE8 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE9 AFTER ADVANCING 1.
    MOVE 1 TO LINE-NO.
PRINT-INDIVIDUAL.
    IF DELETE-FLAG IS EQUAL TO "Y"
      GO TO SKIP-WRITE.
    MOVE CORRESPONDING NEW-TAPE TO OUTPUT-LINE.
    IF BIRTH-DATE IN NEW-TAPE IS NUMERIC
      MOVE CORRESPONDING BIRTH-DATE IN NEW-TAPE TO DATE-OF-BIRTH
      MOVE "/" TO FILLA FILLB
    ELSE
      MOVE SPACES TO DATE-OF-BIRTH.
    IF HIGHEST-GRD OF STUDENT IN NEW-TAPE IS NUMERIC
      ADD 1 HIGHEST-GRD OF STUDENT IN NEW-TAPE GIVING TMP-NO
      MOVE STU-LEVS (TMP-NO) TO HGT-GDL IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO HGT-GDL IN OUTPUT-LINE.
    IF SEX OF STUDENT IN NEW-TAPE IS EQUAL TO "1"
      MOVE "M" TO SEX IN OUTPUT-LINE
    ELSE
      IF SEX OF STUDENT IN NEW-TAPE IS EQUAL TO "2"
        MOVE "F" TO SEX IN OUTPUT-LINE
      ELSE
        MOVE SPACES TO SEX IN OUTPUT-LINE.
    IF RACE OF STUDENT IN NEW-TAPE IS NUMERIC
      MOVE RACE OF STUDENT IN NEW-TAPE TO TMP-NO
      MOVE RACES (TMP-NO) TO RACE IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO RACE IN OUTPUT-LINE.
    IF DISADV OF HANDICAP IN NEW-TAPE IS NUMERIC
      ADD 1 DISADV OF HANDICAP IN NEW-TAPE GIVING TMP-NO
      MOVE DISADVS (TMP-NO) TO DISADV IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO DISADV IN OUTPUT-LINE.
    IF PHYSICAL OF HANDICAP IN NEW-TAPE IS NUMERIC
      ADD 1 PHYSICAL OF HANDICAP IN NEW-TAPE GIVING TMP-NO
      MOVE PHY-HNDYS (TMP-NO) TO PHY-HNDY IN OUTPUT-LINE
```

Figure 31: Source Listing of UPDATE (Cont)

```
        ELSE
          MOVE SPACES TO PHY-HNDY IN OUTPUT-LINE.
        IF MENTAL OF HANDICAP IN NEW-TAPE IS NUMERIC
          ADD 1 MENTAL OF HANDICAP IN NEW-TAPE GIVING TMP-NO
          MOVE MNT-HNDYS (TMP-NO) TO MNT-HNDY IN OUTPUT-LINE
        ELSE
          MOVE SPACES TO MNT-HNDY IN OUTPUT-LINE.
        IF ANY-KIND OF HANDICAP IN NEW-TAPE IS EQUAL TO "0"
          MOVE " NO" TO ANY-PRB IN OUTPUT-LINE
        ELSE
          IF ANY-KIND OF HANDICAP IN NEW-TAPE IS EQUAL TO "1"
            MOVE "YES" TO ANY-PRB IN OUTPUT-LINE
          ELSE
            MOVE SPACES TO ANY-PRB IN OUTPUT-LINE.
        IF CLASSIFICATION OF PROG IN NEW-TAPE IS NUMERIC
          ADD 1 CLASSIFICATION OF PROG IN NEW-TAPE GIVING TMP-NO
          MOVE CLASES (TMP-NO) TO CLASE IN OUTPUT-LINE
        ELSE
          MOVE SPACES TO CLASE IN OUTPUT-LINE.
        IF GRADE-LEVEL OF PROG IN NEW-TAPE IS NUMERIC
          ADD 1 GRADE-LEVEL OF PROG IN NEW-TAPE GIVING TMP-NO
          MOVE PROG-LEVS (TMP-NO) TO GRD-LEV OF PROG IN OUTPUT-LINE
        ELSE
          MOVE SPACES TO GRD-LEV OF PROG IN OUTPUT-LINE.
        IF HOURLY-RATE IN NEW-TAPE IS NUMERIC
          MOVE "." TO DEC-PT IN OUTPUT-LINE
        ELSE
          MOVE SPACE TO DEC-PT IN OUTPUT-LINE.
        IF LINE-NO IS GREATER THAN 24
          WRITE STUDENT-LISTING FROM CONT-CLASS AFTER ADVANCING 2
          PERFORM WRITE-TITLE.
        ADD 1 TO LINE-NO.
        WRITE STUDENT-LISTING FROM OUTPUT-LINE AFTER ADVANCING 2.
    SKIP-WRITE.
        IF LINE-SCH-CLS IS NOT EQUAL TO STU-SCH-CLS AND TAPE-SCH-CLS
          ALTER PRINT-LINE-CK TO PROCEED TO END-ALTER-CK
          GO TO END-ALTER-CK.
    WRITE-NEW-TAPE.
        GO TO WRITE-RECORD-OUT.
    DELETE-RECORD-SKIP.
        ALTER WRITE-NEW-TAPE TO PROCEED TO WRITE-RECORD-OUT.
        MOVE "N" TO DELETE-FLAG.
        GO TO PROCESS-NXT-RCD.
    WRITE-RECORD-OUT.
        WRITE NEW-TAPE.
        ADD 1 TO NUMB-STUDENTS.
    PROCESS-NXT-RCD.
        GO TO TEST-STU-TAPE-1.
```

Figure 31: Source Listing of UPDATE (Cont)

```
STU-END.
    IF TAPE-FIN IS EQUAL TO "YES"
      ALTER PROCESS-NXT-RCD TO PROCEED TO FINISH-RUN
    ELSE
      IF CARD-FIN IS EQUAL TO "YES"
        ALTER PROCESS-NXT-RCD TO PROCEED TO MOVE-OLD-TAPE
      ELSE
        ALTER PROCESS-NXT-RCD TO PROCEED TO TEST-CARD-TAPE
              END-CARD-TAPE TO MOVE-OLD-TAPE.
    ALTER END-ALTER-CK TO PROCEED TO END-ALTER-TAPE.
    MOVE ALL HIGH-VALUE TO STU-SCH-CLS.
    MOVE "YES" TO STU-FIN.


CARD-END-1.
    IF STU-FIN IS EQUAL TO "YES"
      MOVE " *** TERMINAL ERROR ***  THERE IS NO CARD INPUT AND N
           "O NEW STUDENT INPUT.  USE A UTILITY TO COPY THE TAPE"
           TO PRINT-LINE
      GO TO STOP-RUN.

CARD-END.
    IF STU-FIN IS EQUAL TO "YES"
      ALTER CHECK-CARD TO PROCEED TO MOVE-OLD-TAPE
            PROCESS-NXT-RCD TO PROCEED TO MOVE-OLD-TAPE
    ELSE
      ALTER CHECK-NEW-STU TO PROCEED TO MOVE-NEW-STU
      IF TAPE-FIN IS EQUAL TO "YES"
        ALTER PROCESS-NXT-RCD TO PROCEED TO MOVE-NEW-STU
      ELSE
        ALTER CHECK-CARD TO PROCEED TO TEST-STU-TAPE-2.
    MOVE "YES" TO CARD-FIN.


TAPE-END.
    MOVE "NOT IN MASTER FILE." TO MSG IN CARD-ERR.
    IF STU-FIN IS EQUAL TO "YES"
      ALTER PROCESS-NXT-RCD TO PROCEED TO FINISH-RUN
    ELSE
      IF CARD-FIN IS EQUAL TO "YES"
        ALTER PROCESS-NXT-RCD TO PROCEED TO MOVE-NEW-STU
      ELSE
        ALTER PROCESS-NXT-RCD TO PROCEED TO CHECK-NEW-STU.
    ALTER END-ALTER-CK TO PROCEED TO END-ALTER-STU.
    MOVE "YES" TO TAPE-FIN.
    MOVE ALL HIGH-VALUE TO TAPE-SCH-CLS.
```

Figure 31: Source Listing of UPDATE (Cont)

```
FINISH-RUN.
    PERFORM CARD-IN-ERROR THRU PRINT-CARD-MSG
    UNTIL CARD-FIN IS EQUAL TO "YES".
    WRITE PRINT-LINE FROM TITLE1 AFTER ADVANCING NEW-PAGE.
    WRITE PRINT-LINE FROM TITLE2 AFTER ADVANCING 1.
    WRITE PRINT-LINE FROM TITLE3 AFTER ADVANCING 1.
    MOVE THIS-DATE TO T-DATE IN SMRY-TITLE.
    MOVE VOLUME-NAME OF NEW-FIRST TO VOLUME-NAME OF SMRY-TITLE.
    WRITE PRINT-LINE FROM SMRY-TITLE AFTER ADVANCING 3.
    IF NUMB-CARD-ERR IS NOT EQUAL TO ZERO
      MOVE NUMB-CARD-ERR TO NUMB IN SMRY-LINE
      MOVE "CARDS IN ERROR." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-COMPLETE IS NOT EQUAL TO ZERO
      MOVE NUMB-COMPLETE TO NUMB IN SMRY-LINE
      MOVE "COMPLEATION CARDS." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-PLC-FLWUP (1) IS NOT EQUAL TO ZERO
      MOVE NUMB-PLC-FLWUP (1) TO NUMB IN SMRY-LINE
      MOVE "INITIAL PLACEMENT CARDS." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-PLC-FLWUP (2) IS NOT EQUAL TO ZERO
      MOVE NUMB-PLC-FLWUP (2) TO NUMB IN SMRY-LINE
      MOVE "FIRST YEAR FOLLOW-UP CARDS." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-PLC-FLWUP (3) IS NOT EQUAL TO ZERO
      MOVE NUMB-PLC-FLWUP (3) TO NUMB IN SMRY-LINE
      MOVE "THIRD YEAR FOLLOW-UP CARDS." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-PLC-FLWUP (4) IS NOT EQUAL TO ZERO
      MOVE NUMB-PLC-FLWUP (4) TO NUMB IN SMRY-LINE
      MOVE "FIFTH YEAR FOLLOW-UP CARDS." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-ADULT NOT EQUAL TO ZERO
      MOVE NUMB-ADULT TO NUMB IN SMRY-LINE
      MOVE "ADULT STUDENTS HAD CARDS PUNCHED." TO MSG IN
      SMRY-LINE
      WRITE PRINT-LINE AFTER ADVANCING 2.
    IF NUMB-DUPLICATE IS NOT EQUAL TO ZERO
      MOVE NUMB-DUPLICATE TO NUMB IN SMRY-LINE
      MOVE "DUPLICATE NEW STUDENT RECORDS." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-NEW-DELETE IS NOT EQUAL TO ZERO
      MOVE NUMB-NEW-DELETE TO NUMB IN SMRY-LINE
      MOVE "NEW STUDENT RECORDS DELETED." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
```

Figure 31: Source Listing of UPDATE (Cont)

```
    IF NUMB-REPLACE IS NOT EQUAL TO ZERO
      MOVE NUMB-REPLACE TO NUMB IN SMRY-LINE
      MOVE "STUDENT RECORDS REPLACED." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    MOVE NUMB-OLD-STU TO NUMB IN SMRY-LINE.
    MOVE "STUDENT RECORDS ON OLD FILE." TO MSG IN SMRY-LINE.
    WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-OLD-DELETE IS NOT EQUAL TO ZERO
      MOVE NUMB-OLD-DELETE TO NUMB IN SMRY-LINE
      MOVE "OLD STUDENT RECORDS DELETED." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    IF NUMB-NEW-STU IS NOT EQUAL TO ZERO
      MOVE NUMB-NEW-STU TO NUMB IN SMRY-LINE
      MOVE "STUDENT RECORDS ADDED TO FILE." TO MSG IN SMRY-LINE
      WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    SUBTRACT 1 FROM NUMB-STUDENTS GIVING NUMB IN SMRY-LINE.
    MOVE "TOTAL STUDENT RECORDS IN CURRENT FILE." TO MSG IN
    SMRY-LINE.
    WRITE PRINT-LINE FROM SMRY-LINE AFTER ADVANCING 2.
    MOVE "           ** NORMAL TERMINATION **" TO PRINT-LINE.

STOP-RUN.
    WRITE PRINT-LINE AFTER ADVANCING 5.
    CLOSE OLDMAS NEWMAS FLWDEL NEWSTU MSGFILE CMPFILE PLCFILE
          STULIST CARDMSG.
    STOP RUN.
```

Figure 31: Source Listing of UPDATE (Cont)

   b. One option is to specify all classes or one class. If a single class is specified (by designating its 5 digit code) then the resulting subfile will contain only the students in that class.

   c. The other option is to specify all schools, one school, or a group of schools. A single school is specified by designating its 9 digit code. Several schools may be designated by specifying from 1 to 8 digits followed by hyphens in the remainder of the 9 digit field. For example the option 816307--- includes all schools from 816307000 to 816307999 inclusive.

   d. If no records are present for the subset described by the class and school option, the program halts with a return code of 2000 and an appropriate error message.

   e. If an error is found in the class or school option the program halts with a return code of 2000 and an appropriate error message.

3. File descriptions

   a. MASREC:

      The master file used as input. See "Master File" for details of format.

   b. SUBREC:

      The subset output file. Its format is the same as MASREC.

   c. MSGFILE:

      The print file where error messages and summary information appear.

   d. PRMFILE:

      The parameter input file. The parameter card is of the following form:

      Col 1-9 - School option. Must be 1 to 9 digits followed by hyphens in the remaining columns or the word 'ALL' followed by 6 blanks.

      Col 10 - Unused.

      Col 11-15 - Class option. Must be 5 digit class code or the word 'ALL' followed by 2 blanks.

      Col 16-80 - Unused.

4. Figure 32 illustrates a typical summary page.
5. Figure 33 is a flow chart for SUBSET while Figure 34 is a program listing.

Program LISTSTU

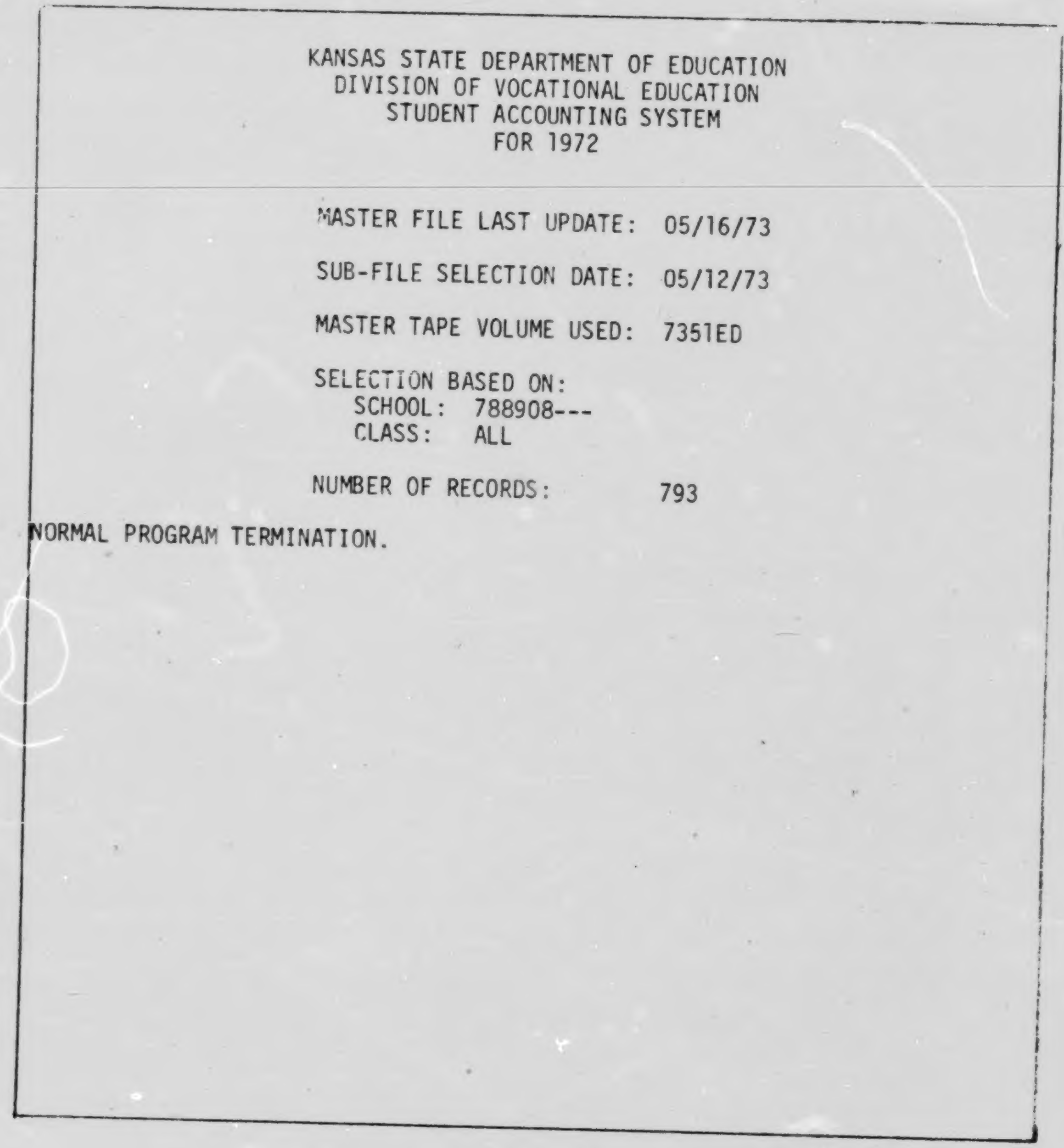
1. Purpose:

This program is designed to perform several functions:

   a. List the students by class within school.
   b. Punch adult completion and placement cards.
   c. Punch non-adult completion, placement, or follow-up 1-year, 3-year or 5-year cards.

2. Program Operation:
   a. The program can be run on the master file or a subset selected by the program SUBSET.
   b. The program begins by reading in a parameter card and checking for the specified options (see 3-f). If there are no options specified or an error is found the program terminates.
   c. One option (PRINT) is designed for printing a class listing similar to the one produced by the UPDATE program only single spaced and including the completion information and latest placement/follow-up information.
   d. If ADULT is specified, completion and placement card images are produced for all records marked as adult. Since the program UPDATE has produced placement card images for adults, use of this option will normally be made only in error recovery situations.
   e. One of COMPLETION, PLACEMENT, or FOLLOW-UP 1, 3, or 5 may be specified. In this case the appropriate card image is produced for all individuals that are non-adult.
3. File Descriptions:
   a. CMPFILE:

   This file contains adult and non-adult completion card images. The record format is:



```
                 KANSAS STATE DEPARTMENT OF EDUCATION
                  DIVISION OF VOCATIONAL EDUCATION
                     STUDENT ACCOUNTING SYSTEM
                             FOR 1972

                MASTER FILE LAST UPDATE:  05/16/73

                SUB-FILE SELECTION DATE:  05/12/73

                MASTER TAPE VOLUME USED:  7351ED

                SELECTION BASED ON:
                   SCHOOL:  788908---
                   CLASS:   ALL

                NUMBER OF RECORDS:          793
NORMAL PROGRAM TERMINATION.
```

Figure 32: Summary Page of SUBSET

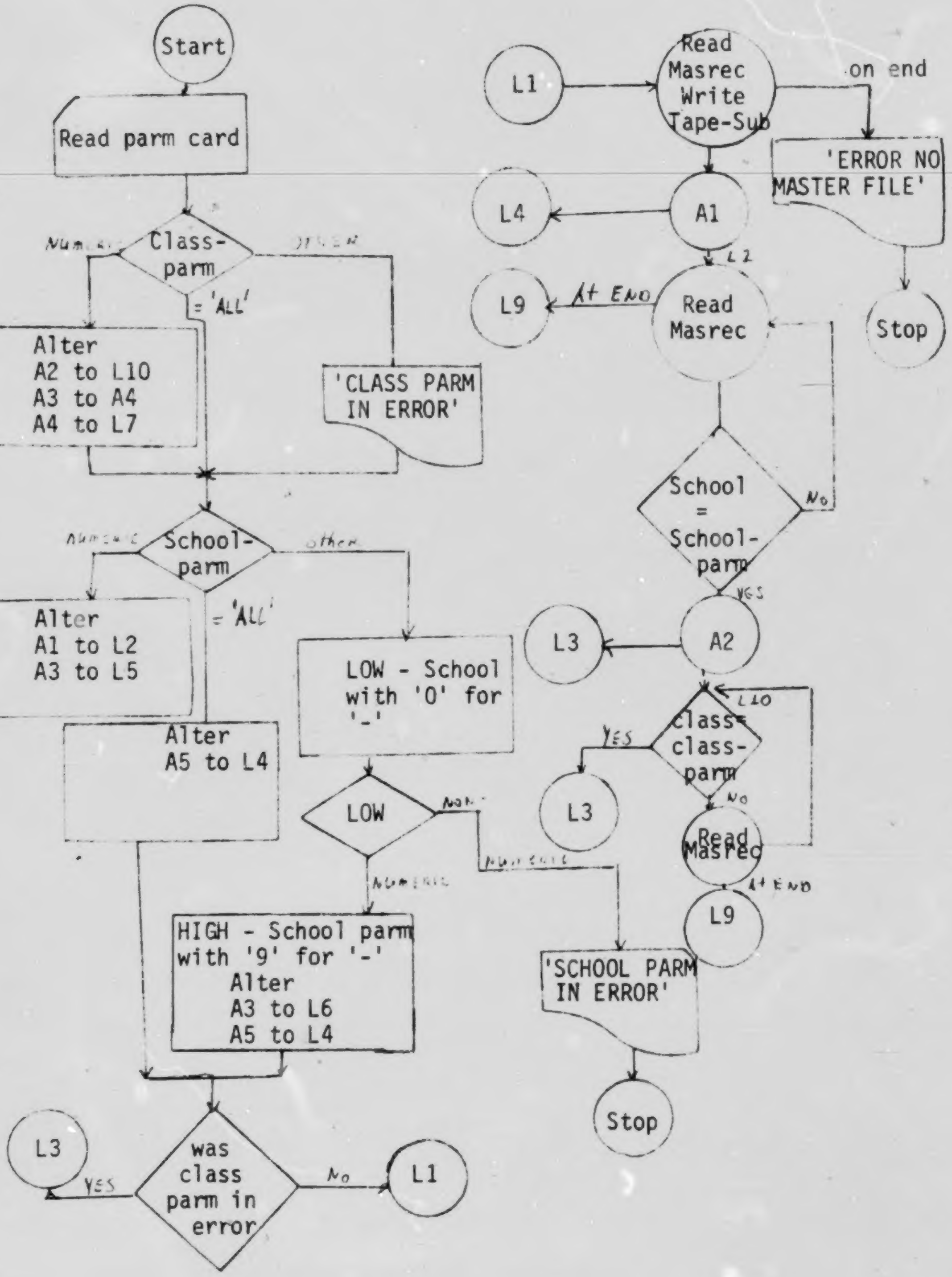


Figure 33: Flow Chart of SUBSET

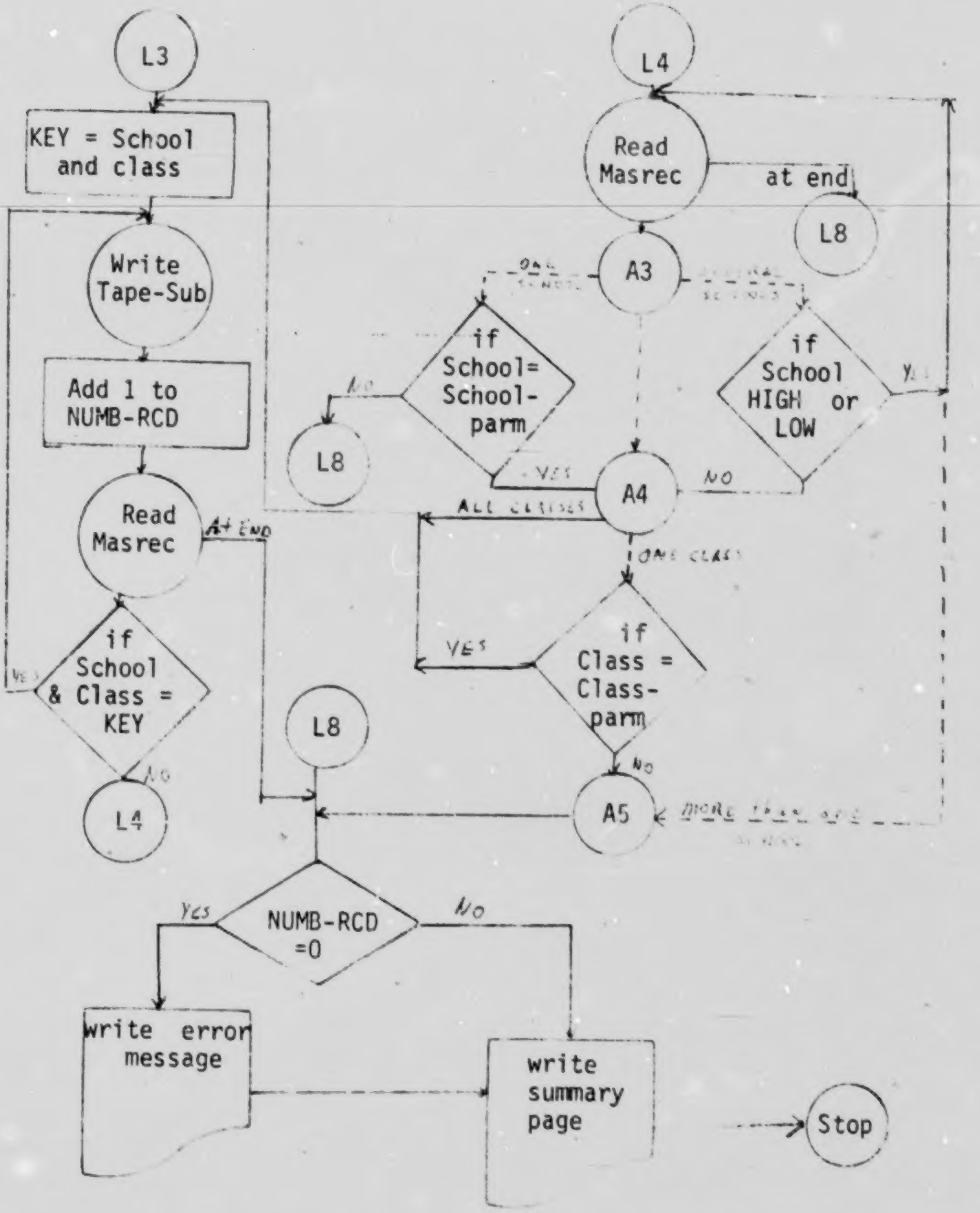


Figure 33: Flow Chart of SUBSET (Cont)

```
IDENTIFICATION DIVISION.
PROGRAM-ID.
    SUBSET.
REMARKS.
    THIS PROGRAM HAS THE FUNCTION OF SELECTING A PART OF THE
    MASTER FILE BASED ON PARAMETERS READ IN.  IT MAY SELECT
    ON ALL, ONE, OR SEVERAL SCHOOL CODES AND ON ALL OR ONE
    CLASS CODE.
AUTHOR.
    JAMES S VANCE.
INSTALLATION.
    KANSAS STATE UNIVERSITY COMPUTING CENTER.



ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.
     IBM-360-H50.
OBJECT-COMPUTER.
     IBM-360-H50.


INPUT-OUTPUT SECTION.
FILE-CONTROL.
     SELECT PRMFILE ASSIGN TO UT-S-PRMFILE.
     SELECT MSGFILE ASSIGN TO UT-S-MSGFILE.
     SELECT  MASREC ASSIGN TO UT-S-MASREC.
     SELECT  SUBREC ASSIGN TO UT-S-SUBREC.



DATA DIVISION.
FILE SECTION,
FD   PRMFILE LABEL RECORD IS OMITTED
             DATA RECORD IS PARM-CARD.
01   PARM-CARD.
     05   SCHOOL-KEY.
          10   COL01 PIC X.
          10   COL02 PIC X.
          10   COL03 PIC X.
          10   COL04 PIC X.
          10   COL05 PIC X.
          10   COL06 PIC X.
          10   COL07 PIC X.
          10   COL08 PIC X.
          10   COL09 PIC X.
```

Figure 34: Source Listing of SUBSET

```
    05  FILLER PIC X.
    05  CLASS-KEY PIC X(5).
    05  FILLER PIC X(65).
FD  MSGFILE LABEL RECORD IS OMITTED
            DATA RECORD IS PRINT-LINE.
01  PRINT-LINE PIC X(49).
FD  MASREC  LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 55 RECORDS
            RECORD CONTAINS 131 CHARACTERS
            DATA RECORD IS TAPE-REC.
01  TAPE-REC.
    05  FILLER PIC X(83).
    05  TAPE-KEY.
        10  SCHOOL-CODE PIC X(9).
        10  CLASS-CODE PIC X(5).
    05  FILLER PIC X(34).
FD  SUBREC  LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 55 RECORDS
            RECORD CONTAINS 131 CHARACTERS
            DATA RECORD IS TAPE-SUB.
01  TAPE-SUB PIC X(131).


WORKING-STORAGE SECTION.
77  NUMB-REC PIC 9(8) COMP SYNC VALUE IS ZERO.
77  SCHOOL-HIGH PIC X(9).
77  SCHOOL-LOW PIC X(9).
77  THIS-KEY PIC X(30).
77  TITLE2 PIC X(49) VALUE IS "           DIVISION OF VOCATIONAL ED
    "UCATION".
77  TITLE3 PIC X(49) VALUE IS "                STUDENT ACCOUNTING SY
    "STEM".
01  TITLE1.
    05  FILLER PIC X.
    05  STATE PIC X(48).
01  TITLE4.
    05  FILLER PIC X(25) VALUE IS "                      FOR ".
    05  PHY-YEAR PIC XXXX.
    05  FILLER PIC X(20) VALUE IS SPACES.
01  LINE1.
    05  FILLER PIC X(8) VALUE IS SPACES.
    05  MSG.
        10  INFO PIC X(11).
        10  CODES PIC X(9).
    05  FILLER PIC X(21) VALUE IS SPACES.
01  LINE2.
    05  FILLER PIC X(8) VALUE IS SPACES.
    05  MSG PIC X(19).
    05  NUMB-RCDS PIC Z,ZZZ,ZZZ.
    05  FILLER PIC X(13) VALUE IS SPACES.
```

Figure 34: Source Listing of SUBSET (Cont)

```
01  LINE3.
    05  FILLER PIC X(33) VALUE IS "         MASTER FILE LAST UPDAT
        "E: ".
    05  THIS-DATE PIC X(8).
    05  FILLER PIC X(8) VALUE IS SPACES.
01  LINE4.
    05  FILLER PIC X(33) VALUE IS "         SUB-FILE SELECTION DAT
        "E: ".
    05  LAST-DATE.
        10  MONTH PIC XX.
        10  FILLER PIC X VALUE IS "/".
        10  DAY PIC XX.
        10  FILLER PIC X VALUE IS "/".
        10  YEAR PIC XX.
    05  FILLER PIC X(8) VALUE IS SPACES.
01  LINE5.
    05  FILLER PIC X(33) VALUE IS "         MASTER TAPE VOLUME USE
        "D: ".
    05  VOLUME-NAME PIC X(6).
    05  FILLER PIC X(10) VALUE IS SPACES.
01  REVERSE-CODE.
    05  COL09 PIC X.
    05  COL08 PIC X.
    05  COL07 PIC X.
    05  COL06 PIC X.
    05  COL05 PIC X.
    05  COL04 PIC X.
    05  COL03 PIC X.
    05  COL02 PIC X.
    05  COL01 PIC X.
01  FIRST-REC.
    05  FILLER PIC X(67).
    05  VOLUME-NAME PIC X(6).
    05  PHY-YEAR PIC XXXX.
    05  STATE PIC X(48).
    05  LAST-DATE.
        10  YEAR PIC XX.
        10  MONTH PIC XX.
        10  DAY PIC XX.



PROCEDURE DIVISION.
    OPEN  INPUT PRMFILE MASREC
          OUTPUT MSGFILE SUBREC.
    READ PRMFILE AT END
      MOVE " ** ERROR **  NO PARM CARD." TO PRINT-LINE
      WRITE PRINT-LINE AFTER ADVANCING 1
      MOVE 2000 TO RETURN-CODE
      GO TO STOP-RUN.
```

Figure 34: Source Listing of SUBSET (Cont)

```
           IF CLASS-KEY IS NUMERIC
              ALTER CLASS-KEY-CK TO PROCEED TO ONE-CLASS
                    SCHOOL-KEY-CK TO PROCEED TO CLASS-KEY-CK
                    FIND-FIRST-CLASS-CK TO PROCEED TO FIND-FIRST-CLASS
           ELSE
              IF CLASS-KEY IS NOT EQUAL TO "ALL"
                 MOVE " ** ERROR **  INVALID CLASS." TO PRINT-LINE
                 WRITE PRINT-LINE AFTER ADVANCING 1
                 MOVE 2000 TO RETURN-CODE
                 ALTER STOP-RUN-CK TO PROCEED TO STOP-RUN.
           IF SCHOOL-KEY IS EQUAL TO "ALL"
              ALTER CLASS-UNEQUAL TO PROCEED TO READ-MASTER-RECORD
           ELSE
              IF SCHOOL-KEY IS NUMERIC
                 ALTER SCHOOL-KEY-CK TO PROCEED TO ONE-SCHOOL
                       FIND-FIRST-SCHOOL-CK TO PROCEED TO
                       FIND-FIRST-SCHOOL
              ELSE
                 MOVE CORRESPONDING SCHOOL-KEY TO REVERSE-CODE
                 EXAMINE REVERSE-CODE REPLACING LEADING "-" BY ZEROES
                 IF REVERSE-CODE IS NUMERIC
                    MOVE SCHOOL-KEY TO SCHOOL-HIGH
                    MOVE SCHOOL-KEY TO SCHOOL-LOW
                    EXAMINE SCHOOL-HIGH REPLACING ALL "-" BY "9"
                    EXAMINE SCHOOL-LOW REPLACING ALL "-" BY ZEROES
                    ALTER SCHOOL-KEY-CK TO PROCEED TO SEVERAL-SCHOOLS
                          CLASS-UNEQUAL TO PROCEED TO READ-MASTER-RECORD
                 ELSE
                    MOVE " ** ERROR **  INVALID SCHOOL CODE." TO PRINT-LINE
                    WRITE PRINT-LINE AFTER ADVANCING 2
                    MOVE 2000 TO RETURN-CODE
                    ALTER STOP-RUN-CK TO PROCEED TO STOP-RUN.
           READ MASREC INTO FIRST-REC AT END GO TO NOT-FOUND.
           WRITE TAPE-SUB FROM FIRST-REC.


       STOP-RUN-CK.
           GO TO FIND-FIRST-SCHOOL-CK.
       FIND-FIRST-SCHOOL-CK.
           GO TO READ-MASTER-RECORD.
       FIND-FIRST-SCHOOL.
           READ MASREC AT END GO TO NOT-FOUND.
           IF SCHOOL-CODE IN TAPE-REC IS NOT EQUAL TO SCHOOL-KEY
           GO TO FIND-FIRST-SCHOOL.
       FIND-FIRST-CLASS-CK.
           GO TO END-KEY-CK.
       FIND-FIRST-CLASS.
           IF CLASS-CODE IN TAPE-REC IS EQUAL TO CLASS-KEY
             GO TO END-KEY-CK.
           READ MASREC AT END GO TO NOT-FOUND.
           GO TO FIND-FIRST-CLASS.
```

Figure 34: Source Listing of SUBSET (Cont)

```
END-KEY-CK.
    MOVE TAPE-KEY TO THIS-KEY.

READ-NEXT-RECORD.
    WRITE TAPE-SUB FROM TAPE-REC.
    ADD 1 TO NUMB-REC.
    READ MASREC AT END GO TO TERMINATE-RUN.
    IF TAPE-KEY IS NOT EQUAL TO THIS-KEY
      GO TO SCHOOL-KEY-CK.
    GO TO READ-NEXT-RECORD.


READ-MASTER-RECORD.
    READ MASREC AT END GO TO TERMINATE-RUN.

SCHOOL-KEY-CK.
    GO TO END-KEY-CK.
SEVERAL-SCHOOLS.
    IF SCHOOL-CODE IN TAPE-REC IS GREATER THAN SCHOOL-HIGH OR
    LESS THAN SCHOOL-LOW
      GO TO READ-MASTER-RECORD.
    GO TO CLASS-KEY-CK.
ONE-SCHOOL.
    IF SCHOOL-CODE IN TAPE-REC IS NOT EQUAL TO SCHOOL-KEY
      GO TO TERMINATE-RUN.

CLASS-KEY-CK.
    GO TO END-KEY-CK.
ONE-CLASS.
    IF CLASS-CODE IN TAPE-REC IS EQUAL TO CLASS-KEY
      GO TO END-KEY-CK.
CLASS-UNEQUAL.
    GO TO TERMINATE-RUN.


TERMINATE-RUN.
    IF NUMB-REC IS GREATER THAN ZERO
      GO TO NUMBER-OK.

NOT-FOUND.
    MOVE " ** ERROR **  REQUESTED SCHOOL/CLASS NOT FOUND." TO
    PRINT-LINE.
    WRITE PRINT-LINE AFTER ADVANCING 2.
    MOVE 2000 TO RETURN-CODE.
    GO TO STOP-RUN.
```

Figure 34: Source Listing of SUBSET (Cont)

```
NUMBER-OK.
     MOVE STATE OF FIRST-REC TO STATE OF TITLE1.
     MOVE PHY-YEAR OF FIRST-REC TO PHY-YEAR OF TITLE4.
     WRITE PRINT-LINE FROM TITLE1 AFTER ADVANCING 1.
     WRITE PRINT-LINE FROM TITLE2 AFTER ADVANCING 1.
     WRITE PRINT-LINE FROM TITLE3 AFTER ADVANCING 1.
     WRITE PRINT-LINE FROM TITLE4 AFTER ADVANCING 1.
     MOVE CURRENT-DATE TO THIS-DATE.
     WRITE PRINT-LINE FROM LINE3 AFTER ADVANCING 3.
     MOVE CORRESPONDING LAST-DATE IN FIRST-REC TO LAST-DATE IN
     LINE4.
     WRITE PRINT-LINE FROM LINE4 AFTER ADVANCING 2.
     MOVE VOLUME-NAME OF FIRST-REC TO VOLUME-NAME OF LINE5.
     WRITE PRINT-LINE FROM LINE5 AFTER ADVANCING 2.
     MOVE "SELECTION BASED ON:" TO MSG IN LINE1.
     WRITE PRINT-LINE FROM LINE1 AFTER ADVANCING 2.
     MOVE "   SCHOOL: " TO INFO IN LINE1.
     MOVE SCHOOL-KEY TO CODES IN LINE1.
     WRITE PRINT-LINE FROM LINE1 AFTER ADVANCING 1.
     MOVE "   CLASS:  " TO INFO IN LINE1.
     MOVE CLASS-KEY TO CODES IN LINE1.
     WRITE PRINT-LINE FROM LINE1 AFTER ADVANCING 1.
     MOVE "NUMBER OF RECORDS: " TO MSG IN LINE2.
     MOVE NUMB-REC TO NUMB-RCDS IN LINE2.
     WRITE PRINT-LINE FROM LINE2 AFTER ADVANCING 2.
     MOVE " NORMAL PROGRAM TERMINATION." TO PRINT-LINE.
     WRITE PRINT-LINE AFTER ADVANCING 2.

STOP-RUN.
     CLOSE MSGFILE PRMFILE MASREC SUBREC.
     STOP RUN.
```

Figure 34: Source Listing of SUBSET (Cont)

Cols 1-15	School name
Cols 16-30	Class name
Cols 31-39	Student number
Cols 40-59	Student name
Col 60	'0'
Cols 61-80	Blank

b. PLCFILE:

This file contains adult placement and non-adult placement and follow-up 1, 3, and 5 card images. Their formats are the same as CMPFILE except that column 60 is one of the following:

'1' - if a placement card
'2' - if a follow-up 1 card
'3' - if a follow-up 3 card
'4' - if a follow-up 5 card

c. MSGFILE:

The file containing error messages and normal termination message.

d. STULIST:

The file containing class within school listings. See "Selected Detail Listings."

e. MASREC:

The master file or subset created by SUBSET. See "Master File" for details of format.

f. PRMFILE:

The parameter input file. It has one card for input with the following format:

1) Cols 1-5 print option. The word PRINT or blank used to mean print the class listings or not.
2) Col 6 blank
3) Cols 7-17 punch option. It can be one of the following:
    a) blank - no card images produced
    b) ADULT - completion and initial placement card images produced for adults.
    c) COMPLETION - completion card images produced for non-adults.

d) PLACEMENT - initial placement card images produced for non-adults.

e) FOLLOW-UP 1 - first year follow-up card images produced for non-adults.

f) FOLLOW-UP 3 - third year follow-up card images produced for non-adults.

g) FOLLOW-UP 5 - fifth year follow-up card images produced for non-adults.

4. The following messages may be produced:
   a. **ERROR** NO PARM CARD.
   b. **ERROR** INVALID PUNCH OPTION.
   c. **ERROR** INVALID PRINT OPTION.
   d. **ERROR** NO VALID OPTIONS WERE FOUND.
   e. NORMAL PROGRAM TERMINATION.
5. Figure 35 is a flow chart of LISTSTU while Figure 36 is a program listing.

Program FEDERAL

1. Purpose:

This program generates the Federal Report Forms 3138 and 3139. Its input is the master file or subset created by the SUBSET program.

2. Program Operation:
   a. The program assumes that the file is already in occupation code order. The master file (or subset) must be sorted by a utility prior to program execution.
   b. The program is a sort routine whose input procedure produces the reports except for unduplicated totals and whose output procedure removes the duplicate records based upon SSN. The sort key is the SSN.
   c. In home economics education only the gainful areas (09.0201-09.0299) are reported.
   d. For an explanation of how students are classified for 3139 see "Federal Report Forms 3138 and 3139."
3. File Descriptions:
   a. SORTIN:

      This is the master file or subset of the master file. See "Master File" for a detailed description.

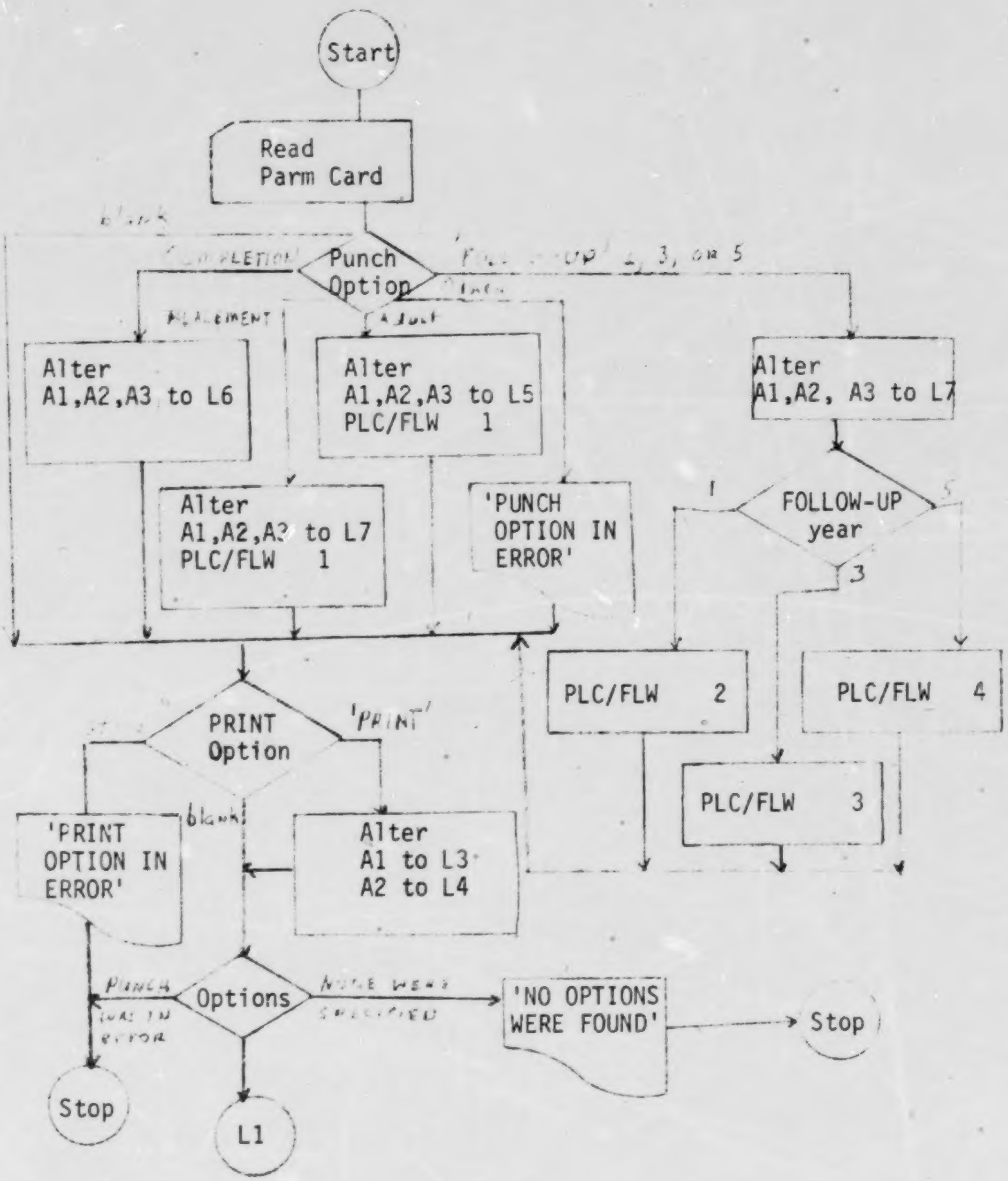


Figure 35: Flow Chart of LISTSTU

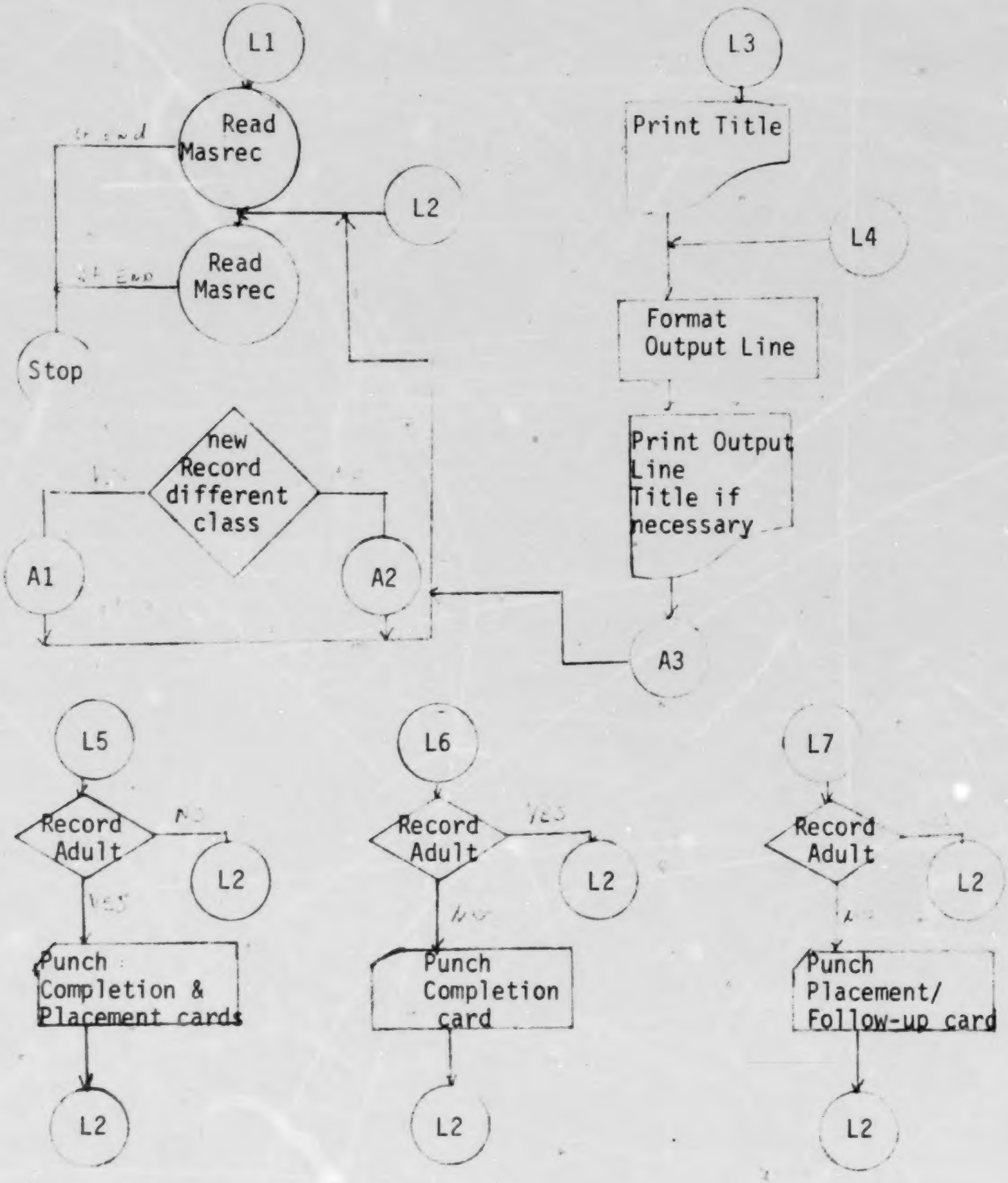


Figure 35: Flow Chart of LISTSTU (Cont)

```
IDENTIFICATION DIVISION.
PROGRAM-ID.
    LISTSTU.
REMARKS.
    THIS PROGRAM DOES THE FOLLOWING:
        1)  PUNCHES COMPLETION CARDS AND PLACEMENT CARDS FOR
    ADULTS.
        2)  PUNCHES ONE OF THE FOLLOWING FOR NON-ADULTS:
            A)  COMPLETION CARDS.
            B)  PLACEMENT CARDS.
            C)  1, 3, OR 5TH YEAR FOLLOW UP CARDS.
        3)  PRINTS COMPLETE LISTING ON INDIVIDUALS.
    THE ABOVE IS DONE ON ALL, SOME, OR ONE SCHOOL AND ALL OR
    ONE CLASS ACCROSS THE DESIGNATED SCHOOL(S).

AUTHOR.
    JAMES S VANCE.
INSTALLATION.
    KANSAS STATE UNIVERSITY COMPUTING CENTER.



ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.
    IBM-360-H50.
OBJECT-COMPUTER.
    IBM-360-H50.
SPECIAL-NAMES.
    C01 IS NEW-PAGE.


INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT CMPFILE ASSIGN TO UT-S-CMPFILE.
    SELECT PLCFILE ASSIGN TO UT-S-PLCFILE.
    SELECT MSGFILE ASSIGN TO UT-S-MSGFILE.
    SELECT PRMFILE ASSIGN TO UT-S-PRMFILE.
    SELECT STULIST ASSIGN TO UT-S-STULIST.
    SELECT  MASREC ASSIGN TO UT-S-MASREC.



DATA DIVISION.
FILE SECTION.
FD  CMPFILE LABEL RECORD IS OMITTED
            BLOCK CONTAINS 91 RECORDS
            RECORD CONTAINS 80 CHARACTERS
            DATA RECORD IS COMPL-CARD.
```

Figure 36 : Source Listing of LISTSTU

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```
01  COMPL-CARD PIC X(80).
FD  PLCFILE LABEL RECORD IS OMITTED
            BLOCK CONTAINS 91 RECORDS
            RECORD CONTAINS 80 CHARACTERS
            DATA RECORD IS PLCMNT-CARD.
01  PLCMNT-CARD PIC X(80).
FD  STULIST LABEL RECORD IS OMITTED
            DATA RECORD IS STUDENT-LISTING.
01  STUDENT-LISTING PIC X(132).
FD  MSGFILE LABEL RECORD IS OMITTED
            DATA RECORD IS PRINT-LINE.
01  PRINT-LINE PIC X(133).
FD  MASREC  LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 55 RECORDS
            RECORD CONTAINS 131 CHARACTERS
            DATA RECORD IS TAPE-REC.
01  TAPE-REC.
    05  OCCUP-OBJ PIC X(15).
    05  SCHOOL PIC X(15).
    05  CLASS PIC X(15).
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC 9.
        10  HIGHEST-GRD PIC 9.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC 99.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE PIC X(6).
    05  PROG.
        10  CLASSIFICATION PIC 9.
        10  GRADE-LEVEL PIC 9.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE.
            15  DLRS PIC X.
            15  CENTS PIC XX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC 9.
        10  PHYSICAL PIC 9.
        10  MENTAL PIC 9.
```

Figure 36 : Source Listing of LISTSTU (Cont)

```
          05   INFO.
                    10   FLW-PLC-FLG PIC 9.
                    10   COMPL PIC 99.
                    10   PLCMNT-FLWUP OCCURS 4 TIMES.
                         15   WORK-STAT PIC 99.
                         15   SCHOOL-STAT PIC 9.
       66   TAPE-KEY RENAMES SCHOOL IN TAPE-REC THRU CLASS IN TAPE-REC.
       66   TAPE-MO-DAY RENAMES MO OF TAPE-REC THRU DAY OF TAPE-REC.
       66   TAPE-PUNCH-INFO RENAMES SCHOOL IN TAPE-REC THRU M-INITIAL IN
            TAPE-REC.
       FD   PRMFILE LABEL RECORD IS OMITTED
                    DATA RECORD IS PARM-CARD.
       01   PARM-CARD.
            05   PRINT-OPTION PIC X(5).
            05   FILLER PIC X.
            05   PUNCH-OPTION.
                 10   FLW-OPTIONS PIC X(10).
                 10   YEAR-OPTION PIC X.
            05   FILLER PIC X(63).
       WORKING-STORAGE SECTION.
       77   TMP-NO PIC 9(8) COMP SYNC.
       77   LST1 PIC 9(8) COMP SYNC.
       77   PAGE-NUMB PIC 9(8) COMP SYNC VALUE IS 1.
       77   LINE-NO PIC 9(8) COMP SYNC.
       77   THIS-KEY PIC X(30) VALUE IS SPACES.
       77   ANY-OPTIONS PIC XXX VALUE IS "NO ".
       77   CONT-CLASS PIC X(132) VALUE IS " (CONTINUED ON NEXT PAGE)".
       77   TITLE2 PIC X(132) VALUE IS "
      -     "                        DIVISION OF VOCATIONAL EDUCATION".
       77   TITLE3 PIC X(132) VALUE IS "
      -     "                              STUDENT ACCOUNTING SYSTEM".
       77   TITLE4 PIC X(132) VALUE IS "
      -     "                        DETAIL LISTING BY SCHOOL AND CLASS".
       77   TITLE9 PIC X(132) VALUE IS SPACES.
       01   TITLE1.
            05   FILLER PIC X(42) VALUE IS SPACES.
            05   STATE PIC X(48).
            05   FILLER PIC X(42) VALUE IS SPACES.
       01   TITLE5.
            05   FILLER PIC X(10) VALUE IS " SCHOOL:  ".
            05   SCHOOL PIC X(15).
            05   FILLER PIC X(41) VALUE IS "
      -          "          FOR ".
            05   YEAR PIC XXXX.
            05   FILLER PIC X(41) VALUE IS "
      -          "     RUN ON ".
            05   THIS-DATE.
                 10   MO PIC XX.
                 10   FILLER PIC X.
                 10   DAY PIC XX.
                 10   FILLER PIC X.
                 10   THIS-YEAR PIC 99.
```

Figure 36: Source Listing of LISTSTU (Cont)

```
          05  FILLER PIC X(9) VALUE IS "    PAGE ".
          05  PAGE-NO PIC ZZZZ.
      01  TITLE6.
          05  FILLER PIC X(10) VALUE IS " CLASS:  ".
          05  CLASS PIC X(15).
          05  FILLER PIC X(107) VALUE IS SPACES.
      01  TITLE7.
          05  FILLER PIC X(60) VALUE IS "
 -            "OCCUP        HGT".
          05  FILLER PIC X(72) VALUE IS "    HANDICP  ANY  ----PROGRAM-
 -            "---  --COOP--  COMPL  REPORT   WORK   SCHL".
      01  TITLE8.
          05  FILLER PIC X(60) VALUE IS "   STUDENT NAME      NUMBER
 -            " OBJ   AGE  GDL  SEX  RACE  DI".
          05  FILLER PIC X(72) VALUE IS "SA  PHY MNT  PRB  CLS G/LV HR/
 -            "INS  WAGE HRS  STATS  PERIOD  STATS  STATS".
      01  STRING01.
          05  STU-LEVS PIC XXX OCCURS 10 TIMES.
      01  STRING02.
          05  RACES PIC XXXX OCCURS 9 TIMES.
      01  STRING03.
          05  DISADVS PIC XXXX OCCURS 10 TIMES.
      01  STRING04.
          05  PHY-HNDYS PIC XX OCCURS 10 TIMES.
      01  STRING05.
          05  MNT-HNDYS PIC XXX OCCURS 10 TIMES.
      01  STRING06.
          05  CLASES PIC XXX OCCURS 10 TIMES.
      01  STRING07.
          05  PROG-LEVS PIC XXX OCCURS 10 TIMES.
      01  STRING08.
          05  PLC-FLW-DESC PIC X(6) OCCURS 4 TIMES.
      01  STRING09.
          05  WORK-STATS PIC X(5) OCCURS 13 TIMES.
      01  STRING10.
          05  SCHOOL-STATS PIC X(5) OCCURS 6 TIMES.
      01  STRING11.
          05  COMPLS PIC X(5) OCCURS 11 TIMES.
      01  THIS-MO-DAY.
          05  MO PIC XX.
          05  DAY PIC XX.
      01  OUTPUT-LINE.
          05  FILLER PIC X.
          05  STUDENT.
              10  F-INITIAL PIC X.
              10  FILLER PIC X VALUE IS SPACE.
              10  M-INITIAL PIC X.
              10  FILLER PIC X VALUE IS SPACE.
              10  LAST-NAME PIC X(12).
              10  FILLER PIC X VALUE IS SPACE.
              10  NUMB PIC X(9).
```

Figure 36 : Source Listing of LUSTSTU (Cont)

```
    05  FILLER PIC XX VALUE IS SPACES.
    05  OCCUP-CODE PIC X(6).
    05  FILLER PIC XXX VALUE IS SPACES.
    05  AGE PIC 99.
    05  FILLER PIC XX VALUE IS SPACES.
    05  HGT-GDL PIC XXX.
    05  FILLER PIC XXX VALUE IS SPACES.
    05  SEX PIC X.
    05  FILLER PIC XXX VALUE IS SPACES.
    05  RACE PIC XXXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  DISADV PIC XXXX.
    05  FILLER PIC XXX VALUE IS SPACES.
    05  PHY-HNDY PIC XX.
    05  FILLER PIC X VALUE IS SPACE.
    05  MNT-HNDY PIC XXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  ANY-PRB PIC XXX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  PROG.
        10  CLASF PIC XXX.
        10  FILLER PIC XX VALUE IS SPACES.
        10  GRD-LEV PIC XXX.
        10  FILLER PIC XXX VALUE IS SPACES.
        10  HRS-OF-INSTR PIC XX.
    05  FILLER PIC XXXX VALUE IS SPACES.
    05  COOP-ONLY.
        10  HOURLY-RATE.
            15  DLRS PIC X.
            15  DEC-PT PIC X.
            15  CENTS PIC XX.
        10  FILLER PIC XX VALUE IS SPACES.
        10  HRS-PER-WEEK PIC XX.
    05  FILLER PIC XX VALUE IS SPACES.
    05  COMPL PIC X(5).
    05  FILLER PIC XX VALUE IS SPACES.
    05  PLC-FLW.
        10  DESC PIC X(6).
        10  FILLER PIC XX VALUE IS SPACES.
        10  WORK-STAT PIC X(5).
        10  FILLER PIC XX VALUE IS SPACES.
        10  SCHOOL-STAT PIC X(5).
01  FIRST-REC.
    05  FILLER PIC X(73).
    05  YEAR PIC XXXX.
    05  STATE PIC X(48).
    05  FILLER PIC X(6).
01  COMPL-RCD.
    05  COMPL-KEY PIC X(59).
    05  FILLER PIC X(21) VALUE IS "0".
```

Figure 36 : Source Listing of LISTSTU (Cont)

```
01  PLCMNT-RCD.
    05  PLCMNT-KEY PIC X(59).
    05  TYP-RCD PIC X.
    05  FILLER PIC X(20) VALUE IS SPACES.


PROCEDURE DIVISION.
    OPEN INPUT  MASREC  PRMFILE
         OUTPUT PLCFILE CMPFILE MSGFILE STULIST.
    READ PRMFILE AT END
      MOVE " ** ERROR **  NO PARM CARD." TO PRINT-LINE
      WRITE PRINT-LINE AFTER ADVANCING 1
      GO TO STOP-RUN.
    IF PUNCH-OPTION IS EQUAL TO "ADULT"
      MOVE "1" TO TYP-RCD OF PLCMNT-RCD
      MOVE "YES" TO ANY-OPTIONS
      ALTER PUNCH-CARDS-CK TO PROCEED TO ADULT-PUNCH-COMPL-PLC
            PRINT-INDIV-CK TO PROCEED TO ADULT-PUNCH-COMPL-PLC
            PRINT-TITLE-CK TO PROCEED TO ADULT-PUNCH-COMPL-PLC
    ELSE
      IF PUNCH-OPTION IS EQUAL TO "COMPLETION"
        MOVE "YES" TO ANY-OPTIONS
        ALTER PUNCH-CARDS-CK TO PROCEED TO NON-ADULT-PUNCH-COMPL
              PRINT-INDIV-CK TO PROCEED TO NON-ADULT-PUNCH-COMPL
              PRINT-TITLE-CK TO PROCEED TO NON-ADULT-PUNCH-COMPL
      ELSE
        IF PUNCH-OPTION IS EQUAL TO "PLACEMENT"
          MOVE "1" TO TYP-RCD OF PLCMNT-RCD
          MOVE "YES" TO ANY-OPTIONS
          ALTER PUNCH-CARDS-CK TO PROCEED TO NON-ADULT-FLW-PLC
                PRINT-INDIV-CK TO PROCEED TO NON-ADULT-FLW-PLC
                PRINT-TITLE-CK TO PROCEED TO NON-ADULT-FLW-PLC
        ELSE
          IF FLW-OPTIONS IS EQUAL TO "FOLLOW-UP" AND YEAR-OPTION
          IS EQUAL TO "1" OR "3" OR "5"
            MOVE "YES" TO ANY-OPTIONS
            ALTER PUNCH-CARDS-CK TO PROCEED TO NON-ADULT-FLW-PLC
                  PRINT-INDIV-CK TO PROCEED TO NON-ADULT-FLW-PLC
                  PRINT-TITLE-CK TO PROCEED TO NON-ADULT-FLW-PLC
            IF YEAR-OPTION IS EQUAL TO "1"
              MOVE "2" TO TYP-RCD IN PLCMNT-RCD
            ELSE
              IF YEAR-OPTION IS EQUAL TO "3"
                MOVE "3" TO TYP-RCD IN PLCMNT-RCD
            ELSE
              MOVE "4" TO TYP-RCD IN PLCMNT-RCD
```

Figure 36 : Source Listing of LISTSTU (Cont)

```
     ELSE
      IF PUNCH-OPTION IS NOT EQUAL TO SPACES
       MOVE " ** ERROR **  INVALID PUNCH OPTION." TO
       PRINT-LINE
       WRITE PRINT-LINE AFTER ADVANCING 2
       ALTER STOP-RUN-CK TO PROCEED TO STOP-RUN.
  IF PRINT-OPTION IS EQUAL TO "PRINT"
   MOVE "YES" TO ANY-OPTIONS
   ALTER PRINT-INDIV-CK TO PROCEED TO PRINT-INDIV
         PRINT-TITLE-CK TO PROCEED TO PRINT-TITLE
  ELSE
   IF PRINT-OPTION IS NOT EQUAL TO SPACES
    MOVE " ** ERROR **  INVALID PRINT-OPTION." TO PRINT-LINE
    WRITE PRINT-LINE AFTER ADVANCING 1
    ALTER STOP-RUN-CK TO PROCEED TO STOP-RUN.
  IF ANY-OPTIONS IS NOT EQUAL TO "YES"
   MOVE " ** ERROR ** NO VALID OPTIONS WERE FOUND." TO
   PRINT-LINE
   WRITE PRINT-LINE AFTER ADVANCING 2
   GO TO STOP-RUN.
STOP-RUN-CK.
  GO TO INITIALIZE-VALUES.
INITIALIZE-VALUES.
  READ MASREC INTO FIRST-REC AT END GO TO TERMINATE-RUN.
  MOVE STATE OF FIRST-REC TO STATE IN TITLE1.
  MOVE YEAR OF FIRST-REC TO YEAR OF TITLE5.
  MOVE CURRENT-DATE TO THIS-DATE IN TITLE5.
  MOVE " <77-8  9 10 11 12 13 14 15>15" TO STRING01.
  MOVE " INDAFROFLIPORNTCHNOSPANFORN CAU OTH" TO STRING02.
  MOVE "NONEECONACOMBOTH" TO STRING03.
  MOVE "NOHHDFSP VCR" TO STRING04.
  MOVE " NOTMREMR ED LDMUL" TO STRING05.
  MOVE "EXPGRGREMWKSPVCPPHCOBCOGAPROTH" TO STRING06.
  MOVE " <77-8  9 10 11 12EPHSPH AP AS" TO STRING07.
  MOVE "PLCMNTFLW 1 FLW 3 FLW 5 " TO STRING08.
  MOVE "  MILNW-SC NILFDC-DSFT-TOFT-ROFT-NOPT-TOPT-ROPT-NOUNEMP
    "  UNKR-ERR" TO STRING09.
  MOVE "FT-REFT-NEPT-REPT-NETH-TRN-SCH" TO STRING10.
  MOVE " COMPCO-CS CONTTRANSTR-DPDP-CSDP-JODP-NES-UNK MISTDC-DS
    " " TO STRING11.
  MOVE MO OF TITLE5 TO MO OF THIS-MO-DAY.
  MOVE DAY OF TITLE5 TO DAY OF THIS-MO-DAY.



READ-NEXT-RECORD.
  READ MASREC AT END GO TO TERMINATE-RUN.
  IF TAPE-KEY IS NOT EQUAL TO THIS-KEY
   MOVE TAPE-KEY TO THIS-KEY
   GO TO PRINT-TITLE-CK.
```

Figure 36 : Source Listing of LISTSTU (Cont)

```
PRINT-INDIV-CK.
    GO TO READ-NEXT-RECORD.
PRINT-TITLE-CK.
    GO TO READ-NEXT-RECORD.
PRINT-TITLE.
    MOVE SCHOOL IN TAPE-REC TO SCHOOL IN TITLE5.
    MOVE CLASS IN TAPE-REC TO CLASS IN TITLE6.
WRITE-TITLE.
    MOVE PAGE-NUMB TO PAGE-NO.
    ADD 1 TO PAGE-NUMB.
    WRITE STUDENT-LISTING FROM TITLE1 AFTER ADVANCING NEW-PAGE.
    WRITE STUDENT-LISTING FROM TITLE2 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE3 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE4 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE5 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE6 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE7 AFTER ADVANCING 2.
    WRITE STUDENT-LISTING FROM TITLE8 AFTER ADVANCING 1.
    WRITE STUDENT-LISTING FROM TITLE9 AFTER ADVANCING 1.
    MOVE 10 TO LINE-NO.
PRINT-INDIV.
    MOVE CORRESPONDING TAPE-REC TO OUTPUT-LINE.
    IF BIRTH-DATE IN TAPE-REC IS NOT NUMERIC
      MOVE ZERO TO AGE IN OUTPUT-LINE
    ELSE
      IF TAPE-MO-DAY IS GREATER THAN THIS-MO-DAY
        COMPUTE AGE IN OUTPUT-LINE = THIS-YEAR - YEAR IN TAPE-REC
        - 1
      ELSE
        SUBTRACT YEAR IN TAPE-REC FROM THIS-YEAR GIVING AGE IN
        OUTPUT-LINE.
    IF HIGHEST-GRD OF STUDENT IN TAPE-REC IS NUMERIC
      ADD 1 HIGHEST-GRD OF STUDENT IN TAPE-REC GIVING TMP-NO
      MOVE STU-LEVS (TMP-NO) TO HGT-GDL IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO HGT-GDL IN OUTPUT-LINE.
    IF SEX OF STUDENT IN TAPE-REC IS EQUAL TO "1"
      MOVE "M" TO SEX IN OUTPUT-LINE
    ELSE
      IF SEX OF STUDENT IN TAPE-REC IS EQUAL TO "2"
        MOVE "F" TO SEX IN OUTPUT-LINE
      ELSE
        MOVE SPACES TO SEX IN OUTPUT-LINE.
    IF RACE OF STUDENT IN TAPE-REC IS NUMERIC
      MOVE RACE OF STUDENT IN TAPE-REC TO TMP-NO
      MOVE RACES (TMP-NO) TO RACE IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO RACE IN OUTPUT-LINE.
    IF DISADV OF HANDICAP IN TAPE-REC IS NUMERIC
      ADD 1 DISADV OF HANDICAP IN TAPE-REC GIVING TMP-NO
      MOVE DISADVS (TMP-NO) TO DISADV IN OUTPUT-LINE
```

Figure 36: Source Listing of LISTSTU (Cont)

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```
      ELSE
        MOVE SPACES TO DISADV IN OUTPUT-LINE.
      IF PHYSICAL OF HANDICAP IN TAPE-REC IS NUMERIC
        ADD 1 PHYSICAL OF HANDICAP IN TAPE-REC GIVING TMP-NO
        MOVE PHY-HNDYS (TMP-NO) TO PHY-HNDY IN OUTPUT-LINE
      ELSE
        MOVE SPACES TO PHY-HNDY IN OUTPUT-LINE.
      IF MENTAL OF HANDICAP IN TAPE-REC IS NUMERIC
        ADD 1 MENTAL OF HANDICAP IN TAPE-REC GIVING TMP-NO
        MOVE MNT-HNDYS (TMP-NO) TO MNT-HNDY IN OUTPUT-LINE
      ELSE
        MOVE SPACES TO MNT-HNDY IN OUTPUT-LINE.
      IF ANY-KIND OF HANDICAP IN TAPE-REC IS EQUAL TO "0"
        MOVE " NO" TO ANY-PRB IN OUTPUT-LINE
      ELSE
        IF ANY-KIND OF HANDICAP IN TAPE-REC IS EQUAL TO "1"
        MOVE "YES" TO ANY-PRB IN OUTPUT-LINE
      ELSE
        MOVE SPACES TO ANY-PRB IN OUTPUT-LINE.
    IF CLASSIFICATION OF PROG IN TAPE-REC IS NUMERIC
      ADD 1 CLASSIFICATION OF PROG IN TAPE-REC GIVING TMP-NO
      MOVE CLASES (TMP-NO) TO CLASE IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO CLASE IN OUTPUT-LINE.
    IF GRADE-LEVEL OF PROG IN TAPE-REC IS NUMERIC
      ADD 1 GRADE-LEVEL OF PROG IN TAPE-REC GIVING TMP-NO
      MOVE PROG-LEVS (TMP-NO) TO GRD-LEV OF PROG IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO GRD-LEV OF PROG IN OUTPUT-LINE.
    IF HOURLY-RATE IN TAPE-REC IS NUMERIC
      MOVE "." TO DEC-PT IN OUTPUT-LINE
    ELSE
      MOVE SPACE TO DEC-PT IN OUTPUT-LINE.
    PERFORM FIND-STATIS THRU END-FIND-STATIS VARYING
    LST1 FROM 4 BY -1 UNTIL LST1 IS LESS THAN 1.
    MOVE SPACES TO PLC-FLW IN OUTPUT-LINE.
    GO TO NO-PLC-FLW.
FOUND-PLC-FLW.
    MOVE PLC-FLW-DESC (LST1) TO DESC OF PLC-FLW IN OUTPUT-LINE.
    IF WORK-STAT IN TAPE-REC (LST1) IS GREATER THAN " 0" AND
    LESS THAN "14"
      MOVE WORK-STAT IN TAPE-REC (LST1) TO TMP-NO
      MOVE WORK-STATS (TMP-NO) TO WORK-STAT IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO WORK-STAT IN OUTPUT-LINE.
    IF SCHOOL-STAT IN TAPE-REC (LST1) IS GREATER THAN "0"
      MOVE SCHOOL-STAT IN TAPE-REC (LST1) TO TMP-NO
      MOVE SCHOOL-STATS (TMP-NO) TO SCHOOL-STAT IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO SCHOOL-STAT IN OUTPUT-LINE.
```

Figure 36: Source Listing of LISTSTU (Cont)

```
  PLC-FLW.
    IF COMPL IN TAPE-REC IS GREATER THAN "00" AND LESS THAN "12"
      MOVE COMPL IN TAPE-REC TO TMP-NO
      MOVE COMPLS (TMP-NO) TO COMPL IN OUTPUT-LINE
    ELSE
      MOVE SPACES TO COMPL IN OUTPUT-LINE.
    IF LINE-NO IS GREATER THAN 57
      WRITE STUDENT-LISTING FROM CONT-CLASS AFTER ADVANCING 2
      PERFORM WRITE-TITLE.
    ADD 1 TO LINE-NO.
    WRITE STUDENT-LISTING FROM OUTPUT-LINE AFTER ADVANCING 1.
    GO TO PUNCH-CARDS-CK.
FIND-STATIS.
    IF PLCMNT-FLWUP (LST1) IS NOT EQUAL TO ZEROS
      GO TO FOUND-PLC-FLW.
END-FIND-STATIS.    EXIT.


PUNCH-CARDS-CK.
    GO TO READ-NEXT-RECORD.

NON-ADULT-FLW-PLC.
     IF GRADE-LEVEL OF PROG IN TAPE-REC IS LESS THAN "8"
     AND FLW-PLC-FLG OF INFO IN TAPE-REC IS EQUAL TO "1"
       MOVE TAPE-PUNCH-INFO TO PLCMNT-KEY
       WRITE PLCMNT-CARD FROM PLCMNT-RCD.
     GO TO READ-NEXT-RECORD.

NON-ADULT-PUNCH-COMPL.
     IF GRADE-LEVEL OF PROG IN TAPE-REC IS LESS THAN "8"
       MOVE TAPE-PUNCH-INFO TO COMPL-KEY
       WRITE COMPL-CARD FROM COMPL-RCD.
     GO TO READ-NEXT-RECORD.

ADULT-PUNCH-COMPL-PLC.
      IF GRADE-LEVEL OF PROG IN TAPE-REC IS GREATER THAN "7"
      MOVE TAPE-PUNCH-INFO TO COMPL-KEY
      WRITE COMPL-CARD FROM COMPL-RCD
      MOVE TAPE-PUNCH-INFO TO PLCMNT-KEY
      WRITE PLCMNT-CARD FROM PLCMNT-RCD.
    GO TO READ-NEXT-RECORD.



TERMINATE-RUN.
    MOVE " NORMAL PROGRAM TERMINATION." TO PRINT-LINE.
    WRITE PRINT-LINE AFTER ADVANCING 2.

STOP-RUN.
    CLOSE PLCFILE CMPFILE MSGFILE PRMFILE STULIST MASREC.
    STOP RUN.
```

Figure 36 : Source Listing of LISTSTU (Cont)

b. SORTREC:
This is the sort work area. The record format is the same as SORTIN.

c. RPT3138:
This is the print file for Form 3138. See "Federal Report Forms 3138 and 3139."

d. RPT3139:
This is the print file for Form 3139. See "Federal Report Forms 3138 and 3139." It is also used to print any sort errors and the normal termination message.

4. There are only two messages that can appear other than the reports themselves, i.e.,

```
***ERROR*** AN ERROR IN THE SORT WAS ENCOUNTERED.
***NORMAL TERMINATION***
```

5. Figure 37 is a flow chart of FEDERAL while Figure 38 is a program listing.

Program SUMMARY

1. Purpose:

This program is designed to provide summary information about initial enrollment, completion, and placement data. The information may be summarized by one category within another, where the categories may be class, school or occupational objective.

2. Program Operation:
   a. The program begins by reading in a parameter card and checking for the specified options.
   b. Three options are for requesting any one, two or all three of the reports: Initial enrollment, completion, and placement.
   c. Two options are for specifying the major and minor categories, where we interpret minor category within major category as the manner of summarization.
   d. If any errors in options occur the program terminates with an appropriate error message.
   e. If no errors occur the program will then sort the input file according to minor within major categories in ascending order.

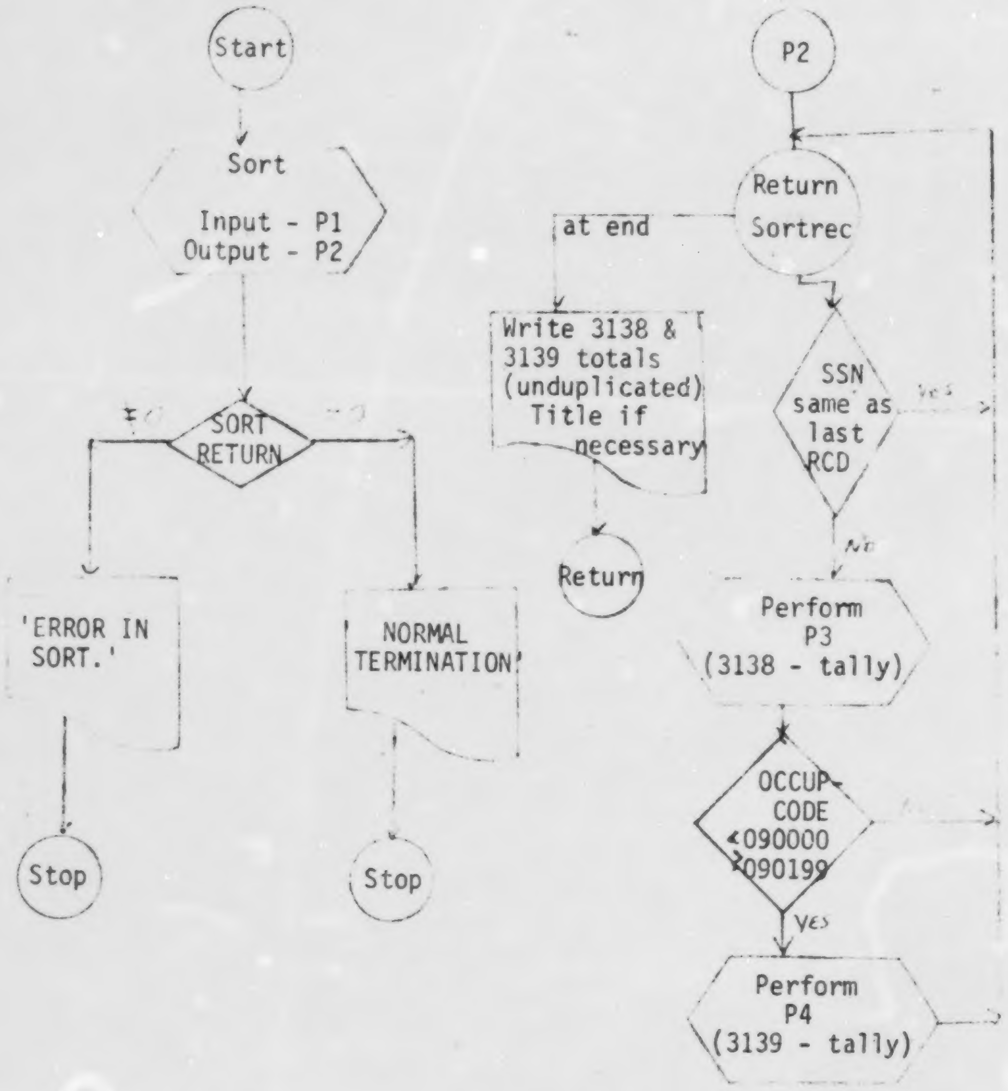
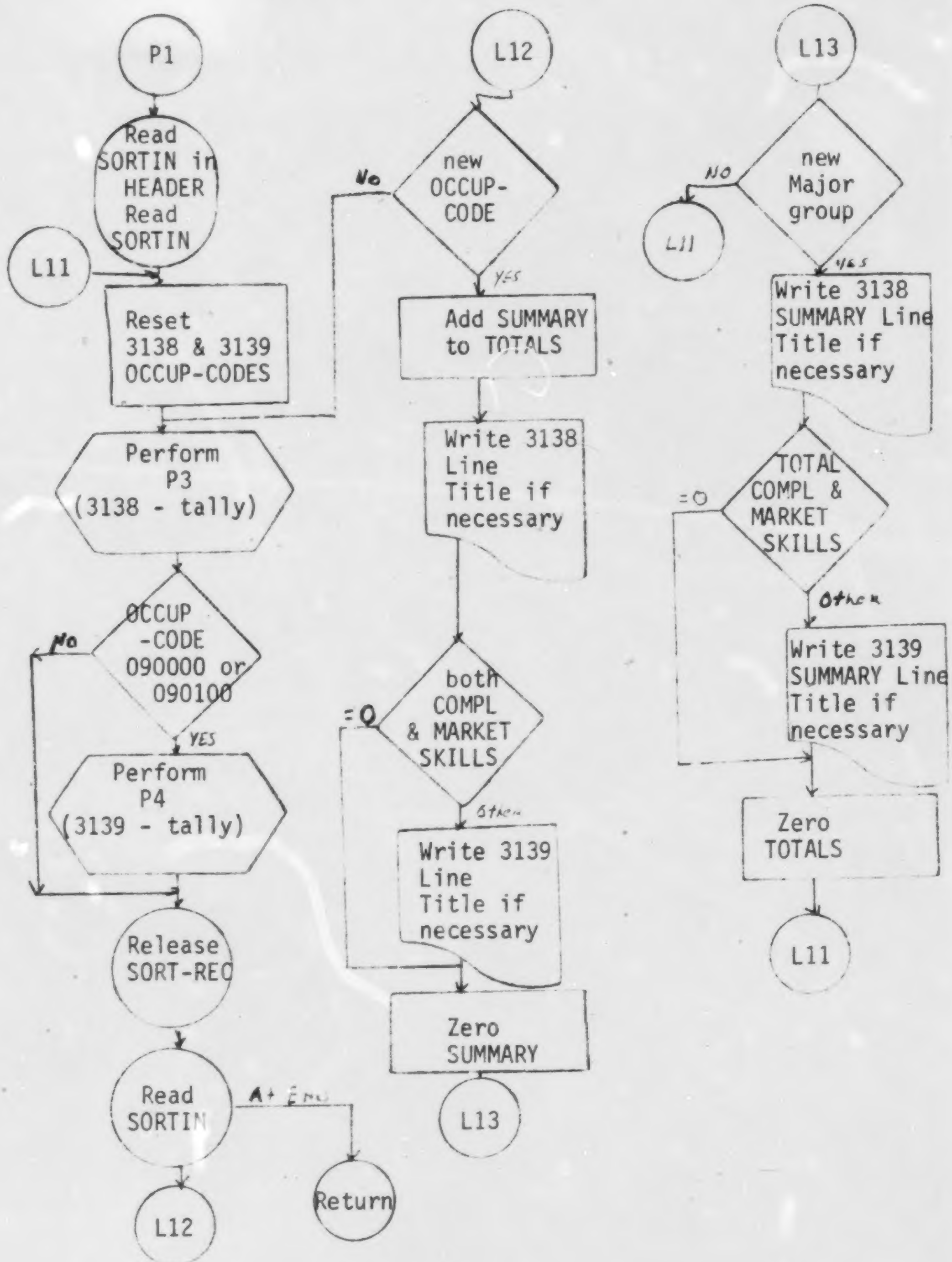


Figure 37: Flow Chart of FEDERAL



P1
Read SORTIN in HEADER Read SORTIN
L11
Reset 3138 & 3139 OCCUP-CODES
Perform P3 (3138 - tally)
OCCUP -CODE 090000 or 090100
No
YES
Perform P4 (3139 - tally)
Release SORT-REC
Read SORTIN
At End
Return
L12
L12
new OCCUP-CODE
No
YES
Add SUMMARY to TOTALS
Write 3138 Line Title if necessary
both COMPL & MARKET SKILLS
=0
Other
Write 3139 Line Title if necessary
Zero SUMMARY
L13
L13
new Major group
NO
L11
Yes
Write 3138 SUMMARY Line Title if necessary
TOTAL COMPL & MARKET SKILLS
=0
Other
Write 3139 SUMMARY Line Title if necessary
Zero TOTALS
L11

Figure 37: Flow Chart of FEDERAL (Cont)

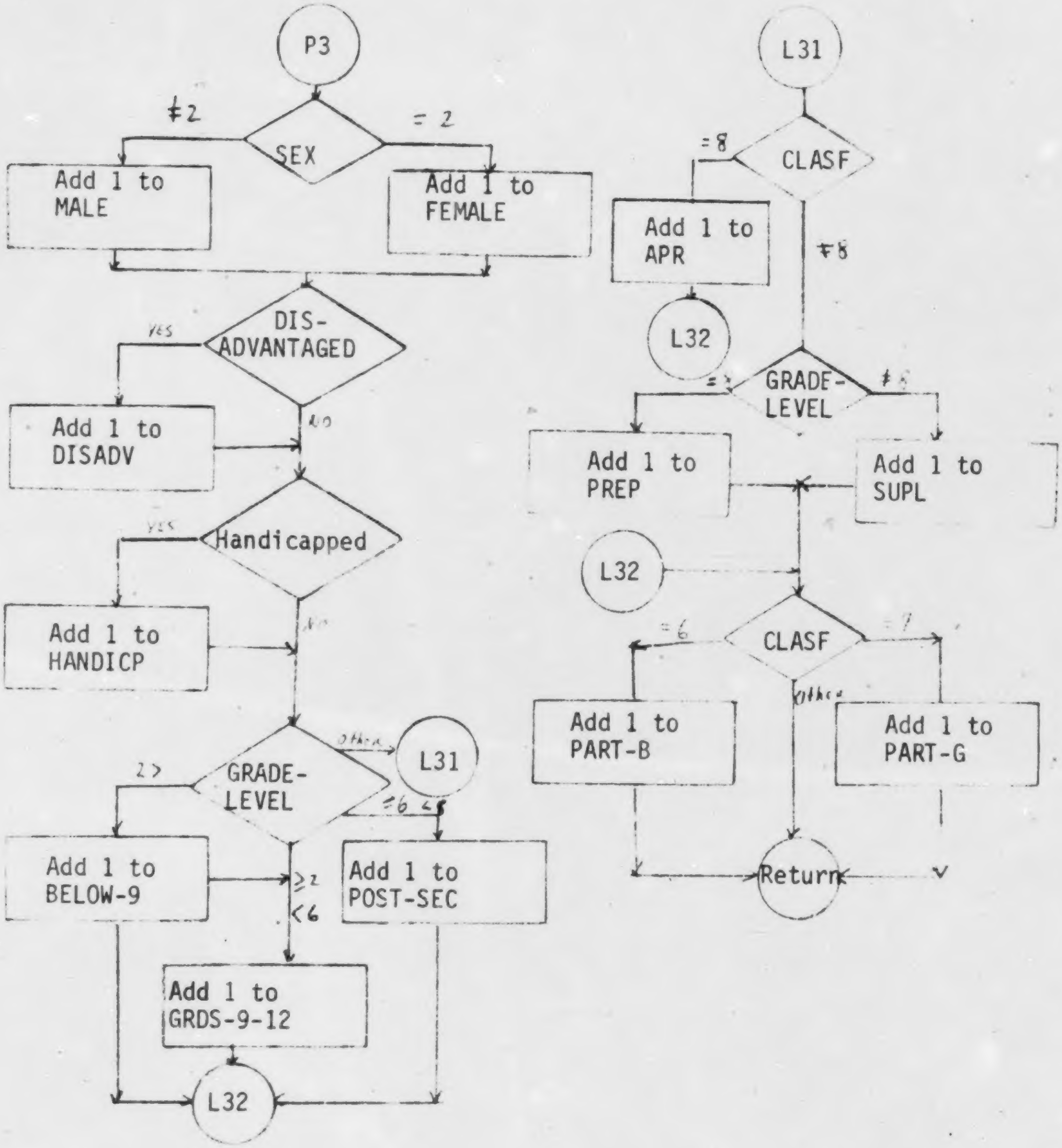


Figure 37: Flow Chart of FEDERAL (Cont)

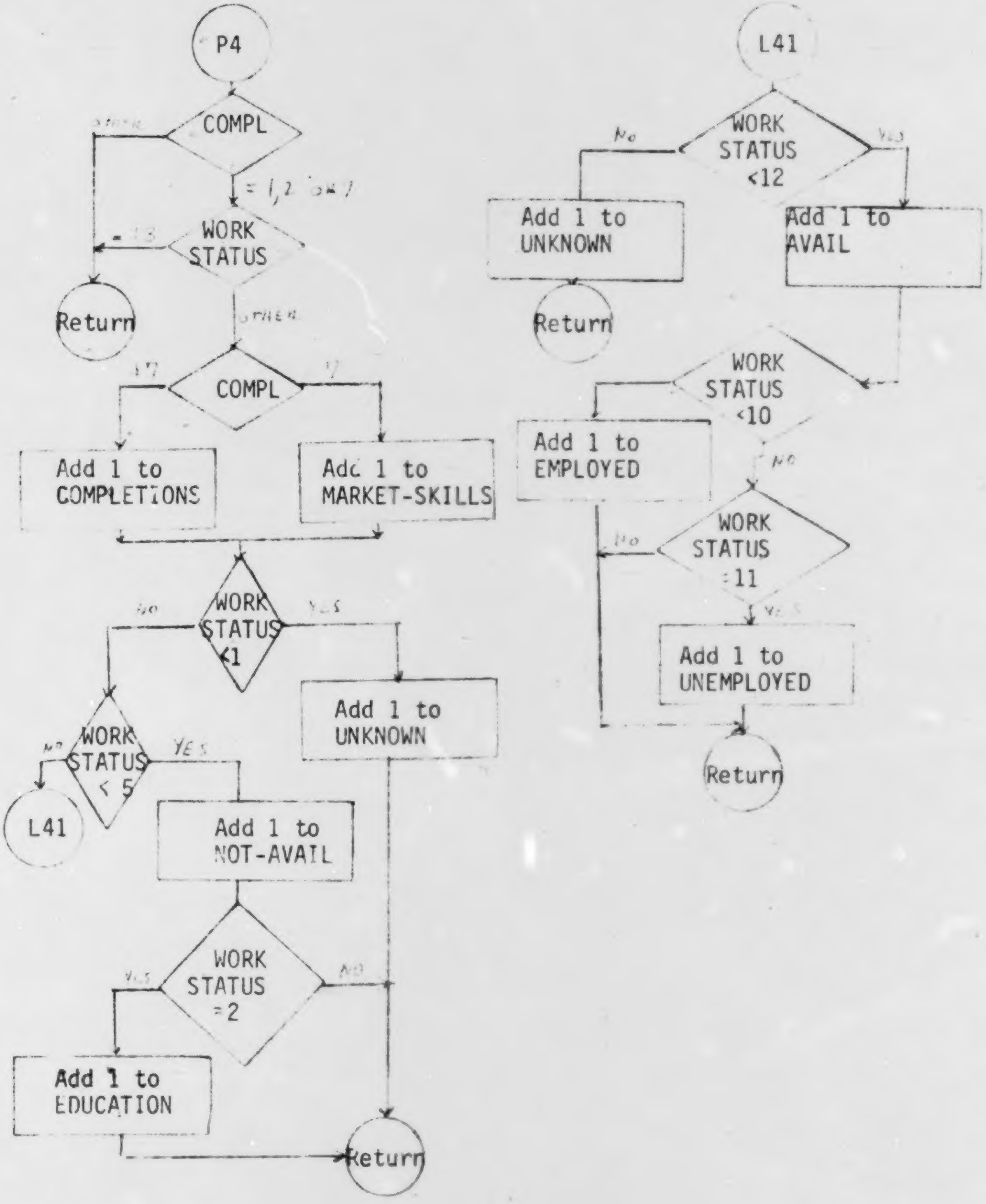


Figure 37: Flow Chart of FEDERAL (Cont)

```
IDENTIFICATION DIVISION.
PROGRAM-ID.
    FEDERAL.
REMARKS.
    THIS PROGRAM TAKES THE MASTER FILE OR SUBSET OF THE
    MASTER FILE AS PRODUCED BY THE SELECTOR PROGRAM AND
    PRODUCES THE FEDERAL REPORTS 3138 AND 3139.

AUTHOR.
    JAMES S VANCE.
INSTALLATION.
    KANSAS STATE UNIVERSITY COMPUTING CENTER.



ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.
    IBM-360-H50.
OBJECT-COMPUTER.
    IBM-360-H50.
SPECIAL-NAMES.
    C01 IS NEW-PAGE.


INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT SORTIN  ASSIGN TO UT-S-SORTIN.
    SELECT RPT3138 ASSIGN TO UT-S-RPT3138.
    SELECT RPT3139 ASSIGN TO UT-S-RPT3139.
    SELECT SORTREC ASSIGN TO UT-S-SORTWKS.



DATA DIVISION.
FILE SECTION.
FD  RPT3138 LABEL RECORDS ARE OMITTED
            DATA RECORD IS 3138-REC.
01  3138-REC PIC X(120).
FD  RPT3139 LABEL RECORDS ARE OMITTED
            DATA RECORD IS 3139-REC.
01  3139-REC PIC X(120).
FD  SORTIN  LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 55 RECORDS
            RECORD CONTAINS 131 CHARACTERS
            DATA RECORD IS TAPE-REC.
01  TAPE-REC PIC X(131).
SD  SORTREC LABEL RECORDS ARE STANDARD
            DATA RECORD IS SORT-REC.
```

Figure 38: Source Listing of FEDERAL

```
01  SORT-REC.
    05  OCCUP-OBJ PIC X(15).
    05  SCHOOL PIC X(15).
    05  CLASS PIC X(15).
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC 9.
        10  HIGHEST-GRD PIC 9.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC 99.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE.
        10  FIRST-PART PIC XX.
        10  LAST-PART PIC XXXX.
    05  PROG.
        10  CLASSIFICATION PIC 9.
        10  GRADE-LEVEL PIC 9.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE.
            15  DLRS PIC X.
            15  CENTS PIC XX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC 9.
        10  PHYSICAL PIC 9.
        10  MENTAL PIC 9.
    05  INFO.
        10  FLW-PLC-FLG PIC 9.
        10  COMPL PIC 99.
        10  PLACEMENT.
            15  WORK-STATUS PIC XX.
            15  SCHOOL-STATUS PIC X.
        10  FOLLOW-UP OCCURS 3 TIMES.
            15  WORK-STAT PIC 99.
            15  SCHOOL-STAT PIC 9.
```

Figure 38: Source Listing of FEDERAL (Cont)

```
WORKING-STORAGE SECTION.
77  LAST-NUMB PIC X(9) VALUE IS SPACES.
77  OCCUP-KEY PIC X(6).
77  FIRST-KEY PIC 99.
77  3138-PAGE-NO PIC 9(8) COMP SYNC VALUE IS ZERO.
77  3139-PAGE-NO PIC 9(8) COMP SYNC VALUE IS ZERO.
77  3138-LINE-NUMB PIC 9(8) COMP SYNC VALUE IS 60.
77  3139-LINE-NUMB PIC 9(8) COMP SYNC VALUE IS 60.
77  BLANK-LINE PIC X(120) VALUE IS SPACES.
01  TITLE-1.
        05  FILLER PIC X(36) VALUE IS SPACES.
        05  STATE PIC X(48).
        05  FILLER PIC X(36) VALUE IS SPACES.
01  TITLE-2 PIC X(120) VALUE IS "
    "                DIVISION OF VOCATIONAL EDUCATION".
01  TITLE-3 PIC X(120) VALUE IS "
    "                    STUDENT ACCOUNTING SYSTEM".
01  TITLE-4 PIC X(120) VALUE IS "
    "                        FEDERAL REPORT 3138".
01  TITLE-5 PIC X(120) VALUE IS "
    "                        FEDERAL REPORT 3139".
01  TITLE-6.
        05  FILLER PIC X(72) VALUE IS "
            "                  FISCAL YEAR ENDING JUNE 30, ".
        05  FISCAL-YEAR PIC 9(4).
        05  FILLER PIC X(19) VALUE IS "      PREPARED ON: ".
        05  RUN-DATE PIC X(8).
        05  FILLER PIC X(14) VALUE IS "          PAGE ".
        05  PAGE-NUMB PIC 999.
01  TITLE-7.
        05  FILLER PIC X(60) VALUE IS "      PROGRAM
            "              DISAD-  HANDI-  BE".
        05  FILLER PIC X(60) VALUE IS "LOW   GRADES  POST-  PREPAR- S
            "UPPLE- APPREN-  PART B  PART G".
01  TITLE-8.
        05  FILLER PIC X(60) VALUE IS "  CODE        TITLE        FEMA
            "LE    MALE VANTAGD  CAPPED GRA".
        05  FILLER PIC X(60) VALUE IS "DE 9  9 - 12 SECNDRY  ATORY
            "MENTAL TICESHP".
01  TITLE-9.
        05  FILLER PIC X(60) VALUE IS "      PROGRAM
            "       MARKETABLE   STATUS   ".
        05  FILLER PIC X(60) VALUE IS "UNAVAILABLE  CONTINUED    AVA
            "ILABLE    EMPLOYED".
01  TITLE-10.
        05  FILLER PIC X(60) VALUE IS "  CODE       TITLE        COM
            "PLETED    SKILLS    UNKNOWN  F".
        05  FILLER PIC X(60) VALUE IS "OR PLACEMENT  EDUCATION  FOR P
            "LACEMENT  IN FIELD  UNEMPLOYED".
```

Figure 38: Source Listing of FEDERAL (Cont)

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```
01  SUMMARY.
    05  COMPLETIONS PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  MARKETABLE-SKILLS PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  UNKNOWN PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  NOT-AVAILABLE PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  EDUCATION PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  AVAILABLE PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  EMPLOYED PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  UNEMPLOYED PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  FEMALE PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  MALE PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  DISADVANTAGED PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  HANDICAPPED PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  BELOW-9 PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  GRADES-9-12 PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  POST-SECONDARY PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  PREPARATORY PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  SUPPLEMENTAL PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  APPRENTICESHIP PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  PART-B PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  PART-G PIC 9(6) COMP SYNC VALUE IS ZERO.
01  TOTALS.
    05  COMPLETIONS PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  MARKETABLE-SKILLS PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  UNKNOWN PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  NOT-AVAILABLE PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  EDUCATION PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  AVAILABLE PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  EMPLOYED PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  UNEMPLOYED PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  FEMALE PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  MALE PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  DISADVANTAGED PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  HANDICAPPED PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  BELOW-9 PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  GRADES-9-12 PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  POST-SECONDARY PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  PREPARATORY PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  SUPPLEMENTAL PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  APPRENTICESHIP PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  PART-B PIC 9(6) COMP SYNC VALUE IS ZERO.
    05  PART-G PIC 9(6) COMP SYNC VALUE IS ZERO.
01  3138-LINE.
    05  FILLER PIC X.
    05  OCCUP-CODE.
        10  FIRST-PART PIC XX.
        10  FILLER PIC X VALUE IS ".".
        10  LAST-PART PIC X(4).
    05  FILLER PIC X VALUE IS SPACE.
    05  OCCUP-OBJ PIC X(15).
    05  FILLER PIC X VALUE IS SPACE.
```

Figure 38: Source Listing of FEDERAL (Cont)

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```
    05  FEMALE PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  MALE PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  DISADVANTAGED PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  HANDICAPPED PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  BELOW-9 PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  GRADES-9-12 PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  POST-SECONDARY PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  PREPARATORY PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  SUPPLEMENTAL PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  APPRENTICESHIP PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  PART-B PIC ZZZ,ZZ9.
    05  FILLER PIC X VALUE IS SPACE.
    05  PART-G PIC ZZZ,ZZ9.
01  3139-LINE.
    05  FILLER PIC X.
    05  OCCUP-CODE.
        10  FIRST-PART PIC XX.
        10  FILLER PIC X VALUE IS ".".
        10  LAST-PART PIC X(4).
    05  FILLER PIC X VALUE IS SPACE.
    05  OCCUP-OBJ PIC X(15).
    05  FILLER PIC X(4) VALUE IS SPACES.
    05  COMPLETIONS PIC ZZZ,ZZ9.
    05  FILLER PIC X(5) VALUE IS SPACES.
    05  MARKETABLE-SKILLS PIC ZZZ,ZZ9.
    05  FILLER PIC XX VALUE IS SPACES.
    05  UNKNOWN PIC ZZZ,ZZ9.
    05  FILLER PIC X(8) VALUE IS SPACES.
    05  NOT-AVAILABLE PIC ZZZ,ZZ9.
    05  FILLER PIC X(4) VALUE IS SPACES.
    05  EDUCATION PIC ZZZ,ZZ9.
    05  FILLER PIC X(8) VALUE IS SPACES.
    05  AVAILABLE PIC ZZZ,ZZ9.
    05  FILLER PIC XXX VALUE IS SPACES.
    05  EMPLOYED PIC ZZZ,ZZ9.
    05  FILLER PIC X(5) VALUE IS SPACES.
    05  UNEMPLOYED PIC ZZZ,ZZ9.
```

Figure 38: Source Listing of FEDERAL (Cont)

```
01  FIRST-REC.
    05  FILLER PIC X(73).
    05  YEAR PIC 9(4).
    05  STATE PIC X(48).
    05  FILLER PIC X(6).
01  GROUP-NAMES.
    05  INDIVD-LISTED.
        10  CODE01 PIC X(15) VALUE IS "VOC AGRICULTURE".
        10  CODE02 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE03 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE04 PIC X(15) VALUE IS "DISTRIBUTIVE ED".
        10  CODE05 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE06 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE07 PIC X(15) VALUE IS "HEALTH OCC & ED".
        10  CODE08 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE09 PIC X(15) VALUE IS "HOME ECONOMICS ".
        10  CODE10 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE11 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE12 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE13 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE14 PIC X(15) VALUE IS "BUSINESS OFFICE".
        10  CODE15 PIC X(15) VALUE IS "UNDEFINED".
        10  CODE16 PIC X(15) VALUE IS "TECHNICAL ED   ".
        10  CODE17 PIC X(15) VALUE IS "TRADE & INDUST ".
    05  ARRAY-LISTED REDEFINES INDIVD-LISTED.
        10  TOTAL-LINE PIC X(15) OCCURS 17 TIMES.


PROCEDURE DIVISION.

MAIN-PROCEDURE SECTION.
    OPEN OUTPUT RPT3138 RPT3139.
    MOVE 85000 TO SORT-CORE-SIZE.
    SORT SORTREC
      ASCENDING KEY NUMB OF SORT-REC
      INPUT PROCEDURE OCCUPATIONAL-BREAKDOWN
      OUTPUT PROCEDURE UNDUPLICATE-BY-SSN.
    IF SORT-RETURN IS NOT EQUAL TO ZERO
      MOVE 2000 TO RETURN-CODE
      MOVE " *** ERROR ***  AN ERROR IN THE SORT WAS ENCOUNTERED"
      TO 3139-REC
    ELSE
      MOVE " *** NORMAL TERMINATION ***" TO 3139-REC.
    WRITE 3139-REC AFTER ADVANCING NEW-PAGE.
    CLOSE RPT3138 RPT3139.
    STOP RUN.
```

Figure 38: Source Listing of FEDERAL (Cont)

```
OCCUPATIONAL-BREAKDOWN SECTION.
    OPEN INPUT SORTIN.
    READ SORTIN INTO FIRST-REC AT END GO TO INPUT-END.
    ADD 1 YEAR IN FIRST-REC GIVING FISCAL-YEAR.
    MOVE CURRENT-DATE TO RUN-DATE.
    MOVE STATE IN FIRST-REC TO STATE IN TITLE-1.
    READ SORTIN INTO SORT-REC AT END GO TO INPUT-END.
    MOVE FIRST-PART IN SORT-REC TO FIRST-KEY.

REINIT-CODES.
    MOVE OCCUP-OBJ IN SORT-REC TO OCCUP-OBJ IN 3138-LINE
    OCCUP-OBJ IN 3139-LINE.
    MOVE CORRESPONDING OCCUP-CODE IN SORT-REC TO OCCUP-CODE
    IN 3138-LINE.
    MOVE CORRESPONDING OCCUP-CODE IN SORT-REC TO OCCUP-CODE
    IN 3139-LINE.
    MOVE OCCUP-CODE IN SORT-REC TO OCCUP-KEY.

NEXT-INPUT-RECORD.
    PERFORM 3138-TALLY.
    IF OCCUP-CODE IN SORT-REC IS LESS THAN "090000" OR
    GREATER THAN "090199"
      PERFORM 3139-TALLY.
    RELEASE SORT-REC.
    READ SORTIN INTO SORT-REC AT END
      ALTER INPUT-LOOP-BACK TO PROCEED TO INPUT-END
      MOVE SPACES TO OCCUP-CODE IN SORT-REC
      GO TO WRITE-OCCUP-SUMMARY.
    IF OCCUP-CODE IN SORT-REC IS EQUAL TO OCCUP-KEY
      GO TO NEXT-INPUT-RECORD.

WRITE-OCCUP-SUMMARY.
    ADD CORRESPONDING SUMMARY TO TOTALS.
    IF 3138-LINE-NUMB IS GREATER THAN 58
      PERFORM 3138-TITLE.
    ADD 2 TO 3138-LINE-NUMB.
    MOVE CORRESPONDING SUMMARY TO 3138-LINE.
    WRITE 3138-REC FROM 3138-LINE AFTER ADVANCING 2.
    IF COMPLETIONS IN SUMMARY IS EQUAL TO ZERO AND
    MARKETABLE-SKILLS IN SUMMARY IS EQUAL TO ZERO
      GO TO SKIP-3139-LINE-WRITE.
    IF 3139-LINE-NUMB IS GREATER THAN 58
      PERFORM 3139-TITLE.
    ADD 2 TO 3139-LINE-NUMB.
    MOVE CORRESPONDING SUMMARY TO 3139-LINE.
    WRITE 3139-REC FROM 3139-LINE AFTER ADVANCING 2.
SKIP-3139-LINE-WRITE.
    MOVE ALL LOW-VALUES TO SUMMARY.
    IF FIRST-PART IN SORT-REC IS EQUAL TO FIRST-KEY
      GO TO REINIT-CODES.
```

Figure 38: Source Listing of FEDERAL (Cont)

```
      MOVE TOTAL-LINE (FIRST-KEY) TO OCCUP-OBJ IN 3138-LINE
      OCCUP-OBJ IN 3139-LINE.
      MOVE FIRST-PART IN SORT-REC TO FIRST-KEY.
      MOVE ZEROS TO LAST-PART IN 3138-LINE.
      IF 3138-LINE-NUMB IS GREATER THAN 58
        PERFORM 3138-TITLE.
      MOVE CORRESPONDING TOTALS TO 3138-LINE.
      WRITE 3138-REC FROM 3138-LINE AFTER ADVANCING 2.
      ADD 2 TO 3138-LINE-NUMB.
      IF 3138-LINE-NUMB IS GREATER THAN 57
        PERFORM 3138-TITLE
      ELSE
        ADD 1 TO 3138-LINE-NUMB
        WRITE 3138-REC FROM BLANK-LINE AFTER ADVANCING 1.
      IF COMPLETIONS IN TOTALS IS EQUAL TO ZERO AND
      MARKETABLE-SKILLS IN TOTALS IS EQUAL TO ZERO
      GO TO ZERO-TOTALS.
    MOVE ZEROS TO LAST-PART IN 3139-LINE.
    IF 3139-LINE-NUMB IS GREATER THAN 58
      PERFORM 3139-TITLE.
    MOVE CORRESPONDING TOTALS TO 3139-LINE.
    WRITE 3139-REC FROM 3139-LINE AFTER ADVANCING 2.
    ADD 2 TO 3139-LINE-NUMB.
    IF 3139-LINE-NUMB IS GREATER THAN 57
      PERFORM 3139-TITLE
    ELSE
      ADD 1 TO 3139-LINE-NUMB
      WRITE 3139-REC FROM BLANK-LINE AFTER ADVANCING 1.
ZERO-TOTALS.
    MOVE ALL LOW-VALUES TO TOTALS.
INPUT-LOOP-BACK.
    GO TO REINIT-CODES.

INPUT-END.
    CLOSE SORTIN.
INPUT-EXIT.
    EXIT.



UNDUPLICATE-BY-SSN SECTION.
    MOVE "  TOTAL" TO OCCUP-CODE IN 3138-LINE OCCUP-CODE IN
    3139-LINE.
    IN 3139-LINE.
    MOVE "(UNDUPLICATED)"  TO OCCUP-OBJ IN 3138-LINE OCCUP-OBJ

NEXT-OUTPUT-RECORD.
    RETURN SORTREC AT END GO TO END-OUTPUT.
    IF NUMB IN SORT-REC IS EQUAL TO LAST-NUMB
      GO TO NEXT-OUTPUT-RECORD.
```

Figure 38: Source Listing of FEDERAL (Cont)

```
    MOVE NUMB IN SORT-REC TO LAST-NUMB.
    PERFORM 3138-TALLY.
    IF OCCUP-CODE IN SORT-REC IS LESS THAN "090000" OR
    GREATER THAN "090199"
      PERFORM 3139-TALLY.
    GO TO NEXT-OUTPUT-RECORD.

END-OUTPUT.
    MOVE CORRESPONDING SUMMARY TO 3138-LINE.
    IF 3138-LINE-NUMB IS GREATER THAN 57
      PERFORM 3138-TITLE
      WRITE 3138-REC FROM 3138-LINE AFTER ADVANCING 2
    ELSE
      WRITE 3138-REC FROM 3138-LINE AFTER ADVANCING 3.
    MOVE CORRESPONDING SUMMARY TO 3139-LINE.
    IF 3139-LINE-NUMB IS GREATER THAN 57
      PERFORM 3139-TITLE
      WRITE 3139-REC FROM 3139-LINE AFTER ADVANCING 2
    ELSE
      WRITE 3139-REC FROM 3139-LINE AFTER ADVANCING 3.
END-OUTPUT-EXIT.
    EXIT.



3138-TALLY SECTION.
    IF SEX IN SORT-REC IS EQUAL TO "2"
      ADD 1 TO FEMALE IN SUMMARY
    ELSE
      ADD 1 TO MALE IN SUMMARY.
    IF DISADV IN SORT-REC IS GREATER THAN "0"
      ADD 1 TO DISADVANTAGED IN SUMMARY.
    IF PHYSICAL IN SORT-REC IS GREATER THAN "0" OR MENTAL IN
    SORT-REC IS GREATER THAN "0"
      ADD 1 TO HANDICAPPED IN SUMMARY.
    IF GRADE-LEVEL IN SORT-REC IS LESS THAN "2"
      ADD 1 TO BELOW-9 IN SUMMARY
    ELSE
      IF GRADE-LEVEL OF SORT-REC IS LESS THAN "6"
        ADD 1 TO GRADES-9-12 OF SUMMARY
      ELSE
        IF GRADE-LEVEL OF SORT-REC IS LESS THAN "8"
          ADD 1 TO POST-SECONDARY OF SUMMARY
        ELSE
          IF CLASSIFICATION OF SORT-REC IS EQUAL TO "8"
            ADD 1 TO APPRENTICESHIP IN SUMMARY
          ELSE
            IF GRADE-LEVEL OF SORT-REC IS EQUAL TO "8"
              ADD 1 TO PREPARATORY IN SUMMARY
            ELSE
              ADD 1 TO SUPPLEMENTAL IN SUMMARY.
```

Figure 38: Source Listing of FEDERAL (Cont)

```
    IF CLASSIFICATION OF SORT-REC IS EQUAL TO "6"
      ADD 1 TO PART-B IN SUMMARY
    ELSE
      IF CLASSIFICATION OF SORT-REC IS EQUAL TO "7"
        ADD 1 TO PART-G IN SUMMARY.
3138-TALLY-EXIT.
    EXIT.


3139-TALLY SECTION.
    IF COMPL IN SORT-REC IS NOT EQUAL TO "01" AND "02" AND "07"
      GO TO 3139-TALLY-EXIT.
    IF WORK-STATUS IS EQUAL TO "13"
      GO TO 3139-TALLY-EXIT.
    IF COMPL IN SORT-REC IS EQUAL TO "07"
      ADD 1 TO MARKETABLE-SKILLS IN SUMMARY
    ELSE
      ADD 1 TO COMPLETIONS IN SUMMARY.
    IF WORK-STATUS IS LESS THAN "01"
      ADD 1 TO UNKNOWN IN SUMMARY
    ELSE
      IF WORK-STATUS IS LESS THAN "05"
        ADD 1 TO NOT-AVAILABLE IN SUMMARY
        IF WORK-STATUS IS EQUAL TO "02"
          ADD 1 TO EDUCATION IN SUMMARY
        ELSE
          NEXT SENTENCE
      ELSE
        IF WORK-STATUS IS LESS THAN "12"
          ADD 1 TO AVAILABLE IN SUMMARY
          IF WORK-STATUS IS LESS THAN "10"
            ADD 1 TO EMPLOYED IN SUMMARY
          ELSE
            IF WORK-STATUS IS EQUAL TO "11"
            ADD 1 TO UNEMPLOYED IN SUMMARY
          ELSE
            NEXT SENTENCE
      ELSE
        ADD 1 TO UNKNOWN IN SUMMARY.
3139-TALLY-EXIT.
    EXIT.
```

Figure 38: Source Listing of FEDERAL (Cont)

```
3138-TITLE SECTION.
    ADD 1 TO 3138-PAGE-NO.
    MOVE 3138-PAGE-NO TO PAGE-NUMB.
    WRITE 3138-REC FROM TITLE-1 AFTER ADVANCING NEW-PAGE.
    WRITE 3138-REC FROM TITLE-2 AFTER ADVANCING 1.
    WRITE 3138-REC FROM TITLE-3 AFTER ADVANCING 1.
    WRITE 3138-REC FROM TITLE-4 AFTER ADVANCING 1.
    WRITE 3138-REC FROM TITLE-6 AFTER ADVANCING 1.
    WRITE 3139-REC FROM TITLE-7 AFTER ADVANCING 2.
    WRITE 3138-REC FROM TITLE-8 AFTER ADVANCING 1.
    WRITE 3138-REC FROM BLANK-LINE AFTER ADVANCING 1.
    MOVE 9 TO 3138-LINE-NUMB.
END-3138-TITLE.
    EXIT.


3139-TITLE SECTION.
    ADD 1 TO 3139-PAGE-NO.
    MOVE 3139-PAGE-NO TO PAGE-NUMB.
    WRITE 3139-REC FROM TITLE-1 AFTER ADVANCING NEW-PAGE.
    WRITE 3139-REC FROM TITLE-2 AFTER ADVANCING 1.
    WRITE 3139-REC FROM TITLE-3 AFTER ADVANCING 1.
    WRITE 3139-REC FROM TITLE-5 AFTER ADVANCING 1.
    WRITE 3139-REC FROM TITLE-6 AFTER ADVANCING 1.
    WRITE 3139-REC FROM TITLE-9 AFTER ADVANCING 2.
    WRITE 3139-REC FROM TITLE-10 AFTER ADVANCING 1.
    WRITE 3139-REC FROM BLANK-LINE AFTER ADVANCING 1.
    MOVE 9 TO 3139-LINE-NUMB.
END-3139-TITLE.
    EXIT.
```

Figure 38: Source Listing of FEDERAL (Cont)

f. Finally the program will produce the requested reports (see Summary Reports; Enrollment, Completion and Placement).

3. File Descriptions:

a. SORTIN:

The master file or subset of a master file used as input. See "Master File" for description.

b. SORTREC:

The files (work areas) that the records are released to and returned from during the sort process. It has the same format as SORTIN.

c. MSGFILE:

The print file where error messages appear.

d. ENRLRPT:

The print file where the enrollment summary report (if requested) appears.

e. CMPLRPT:

The print file where the completion summary report (if requested) appears.

f. PLCMRPT:

The print file where the placement summary report (if requested) appears.

g. PRMFILE:

The parameter input file. The parameter card is of the following form:

Col 1-3 - Enrollment summary report request.
'YES' or 'NO'

Col 4 - Not used.

Col 5-7 - Completion summary report request.
'YES' or 'NO'

Col 8 - Not used.

Col 9-11 - Placement summary report request.
'YES' or 'NO'

Col 12 - Not used.

Col 13-22 - Major category. Must be 'SCHOOL', 'CLASS' or 'OCCUPATION'.

Col 23 - Not used.

Col 24-33 - Minor category. Must be 'SCHOOL', 'CLASS' or 'OCCUPATION' but not the same as the major category.

Col 34-80 - Not used.

4. Example error messages (all preceded by '***ERROR***'):
   a. PARM CARD MISSING.
   b. MAJOR CATEGORY INVALID.
   c. MINOR CATEGORY INVALID.
   d. MAJOR AND MINOR CATEGORIES THE SAME.
   e. ENROLLMENT OPTION INVALID.
   f. COMPLETION OPTION INVALID.
   g. PLACEMENT OPTION INVALID.
5. Figure 39 is a flow chart of SUMMARY while Figure 40 is a program listing.

FILES

There are several files that are shared between two or more programs. For this reason they are placed in this section with an explanation of their content, record format and usage.

Codes File

1. Description and Purpose:

This is a disk data set. Each record is 53 characters in length. It provides the school, class, and occupational objective number and names. In addition it has the fiscal year and state title. The file is mainly used to verify correctness of school, class, and occupational objective numbers on new student forms. It provides the names associated with the numbers so that they may be inserted into the record. The INIT program uses it to obtain the state title and fiscal year.

2. File Structure:
   a. The file has four major divisions each designated by a code (0-3). Within each division the records are in numeric order by the code number field (except for the first division).

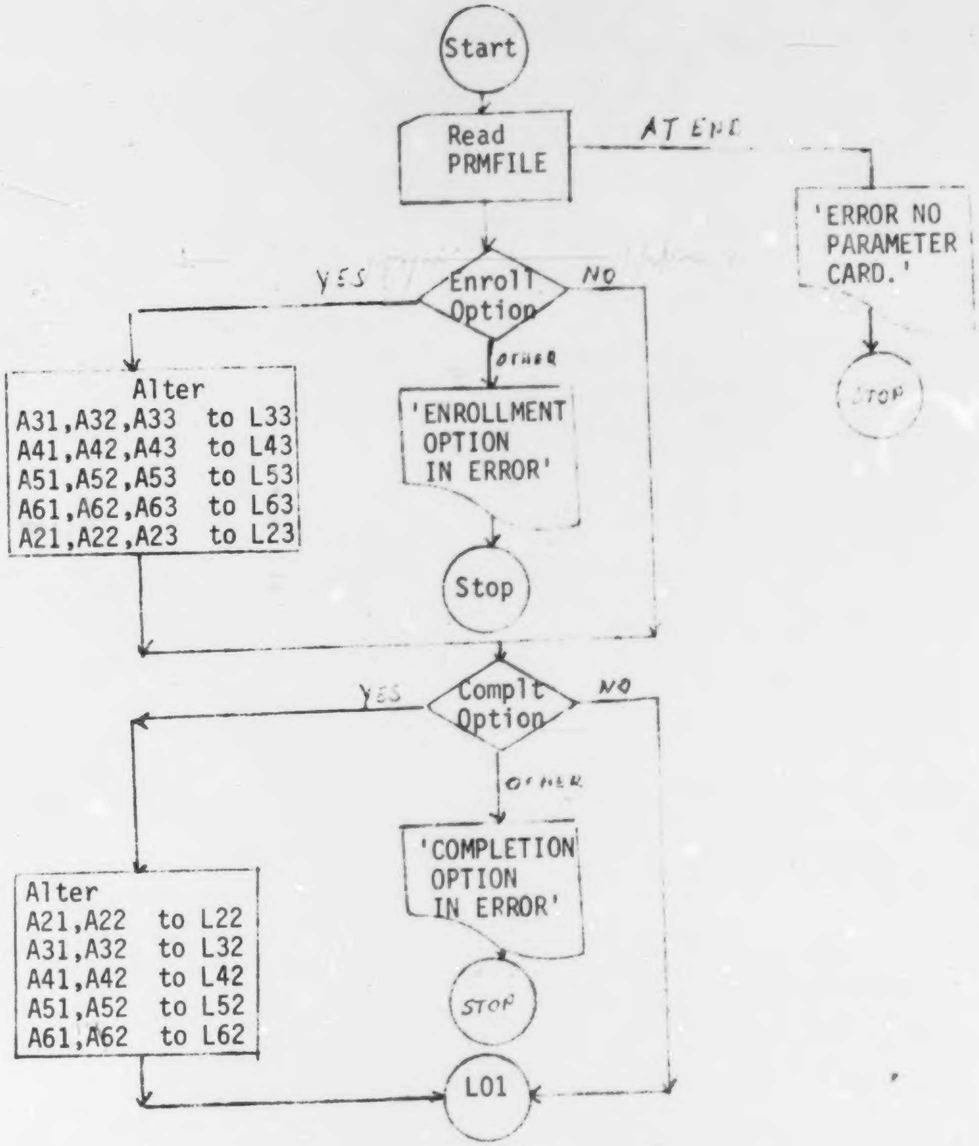

Figure 39: Flow Chart of SUMMARY

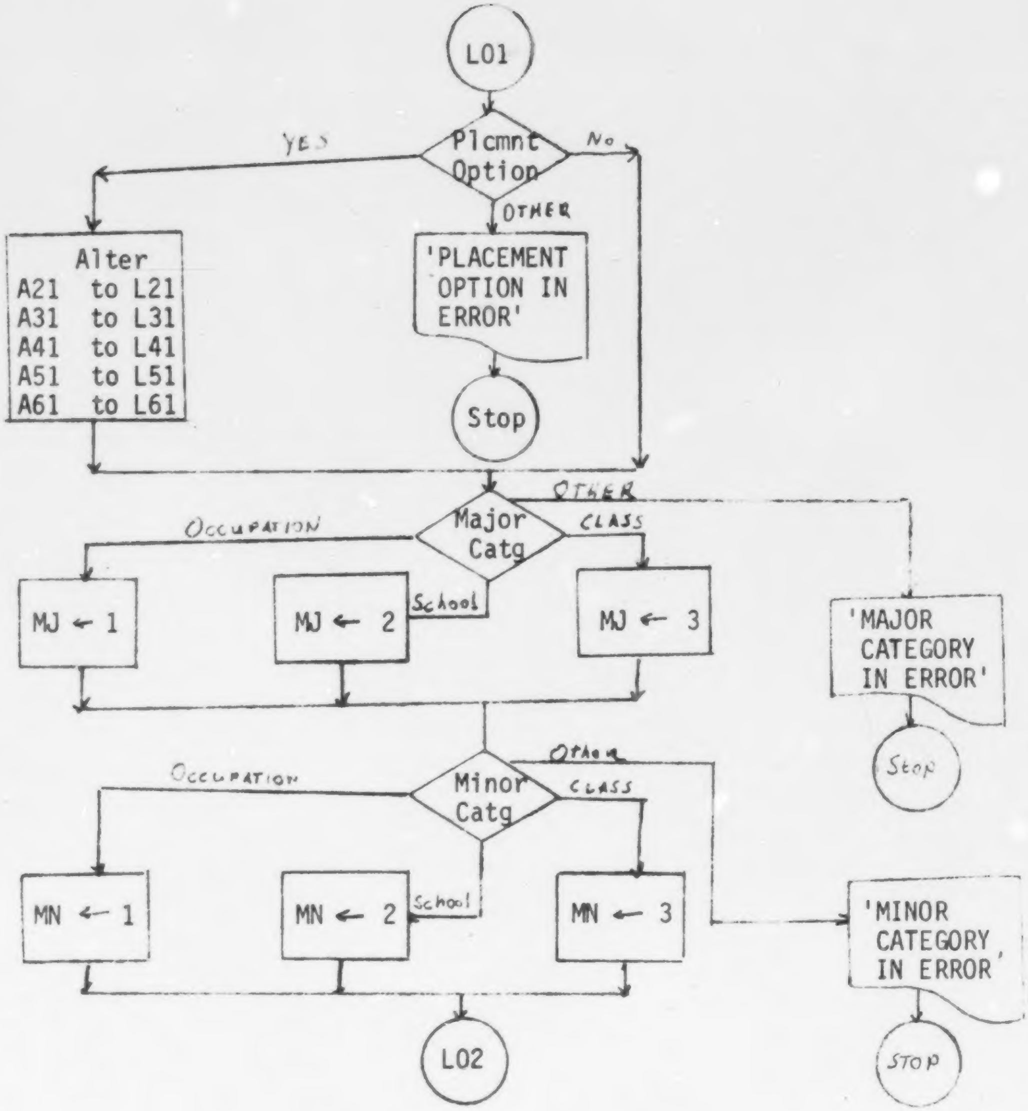

Figure 39: Flow Chart of SUMMARY (Cont)

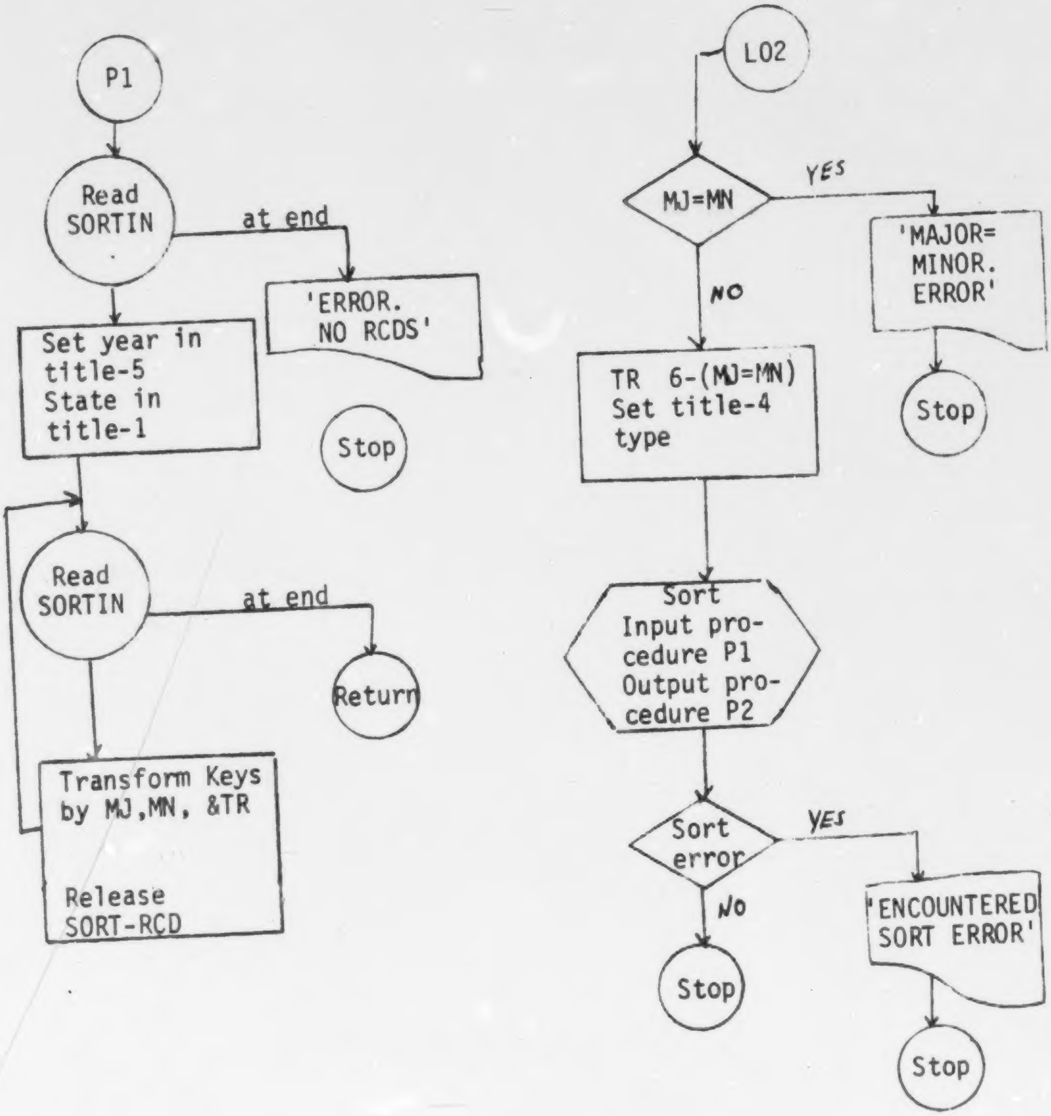

Figure 39: Flow Chart of SUMMARY (Cont)

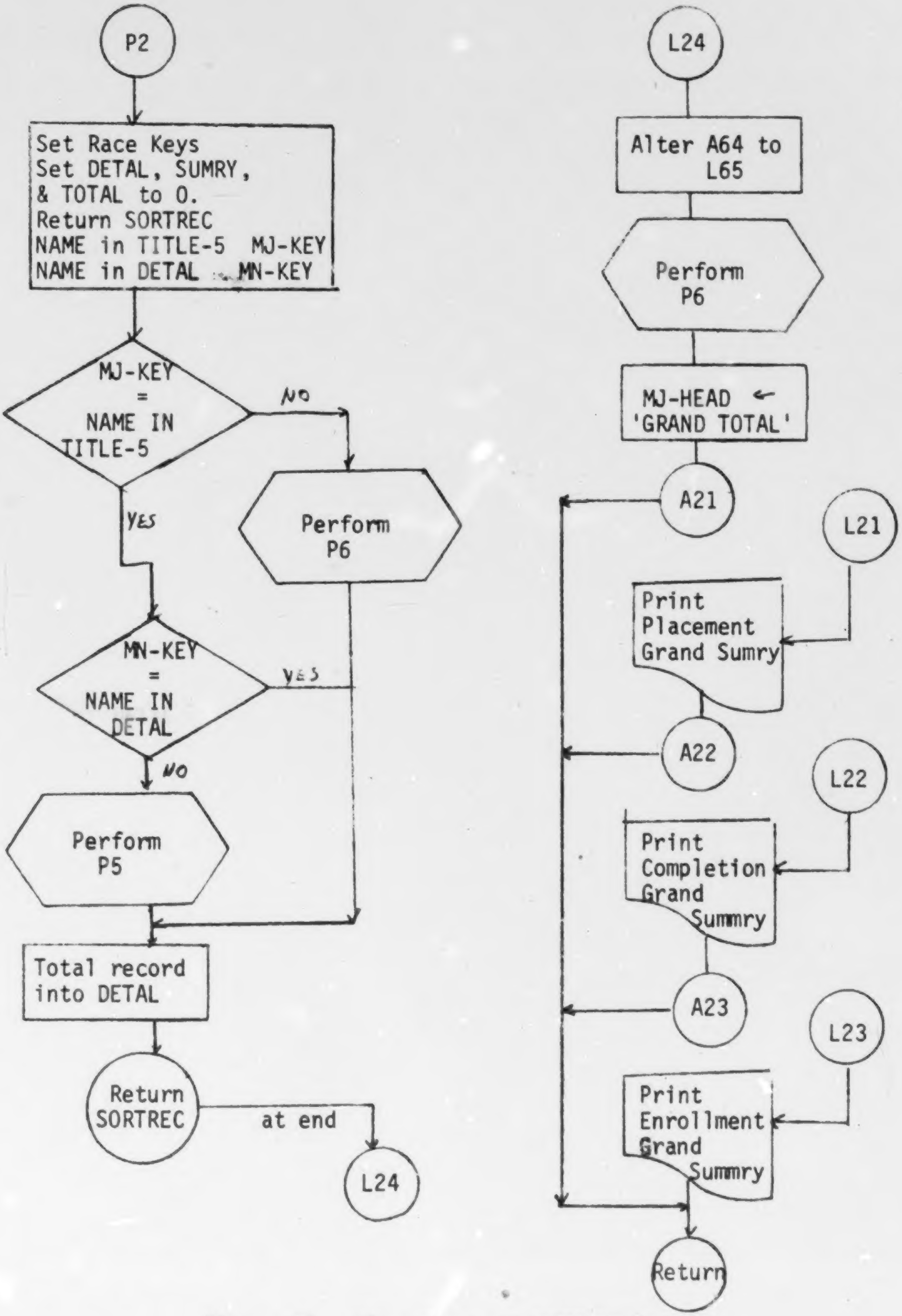

Figure 39: Flow Chart of SUMMARY (Cont)

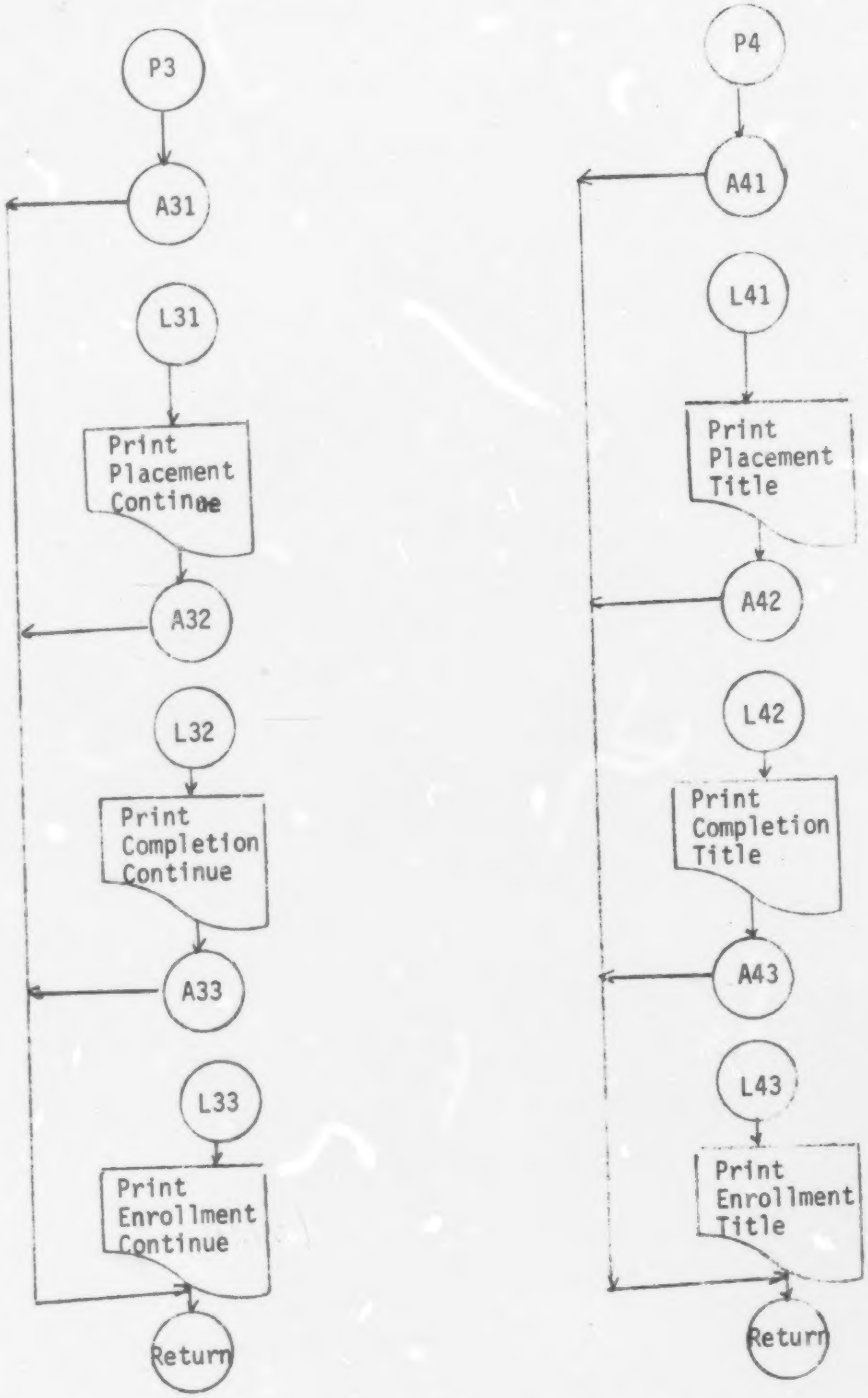

Figure 39: Flow Chart of SUMMARY (Cont)

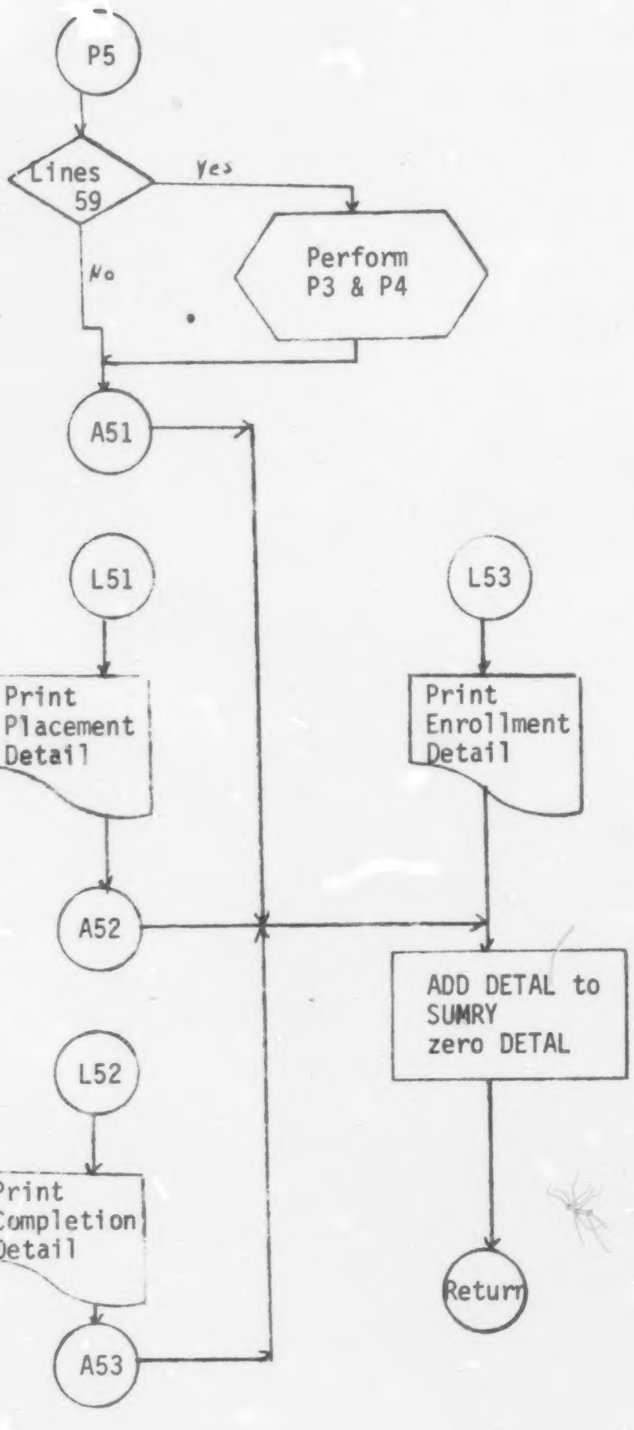

Figure 39: Flow Chart of SUMMARY (Cont)

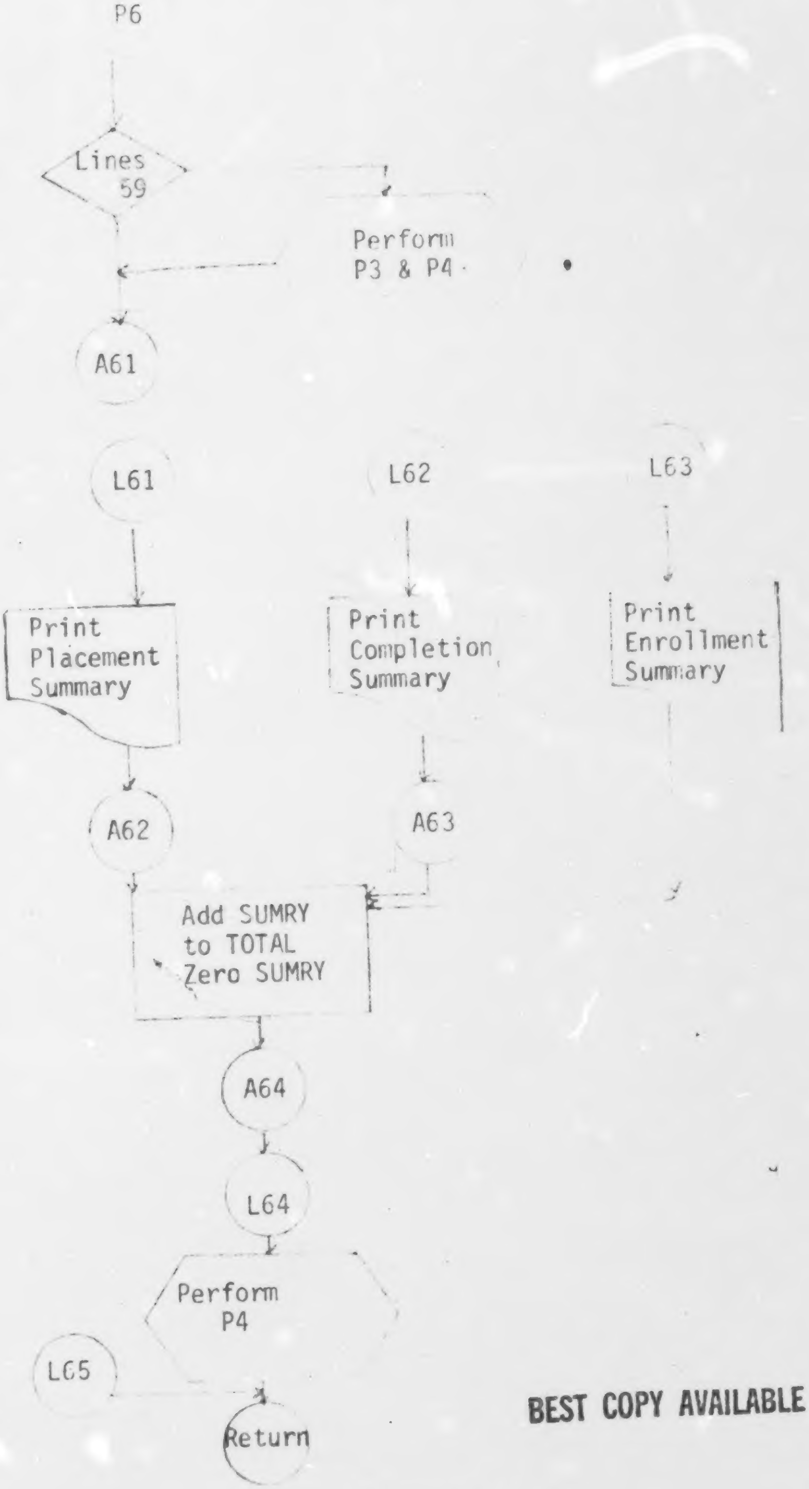

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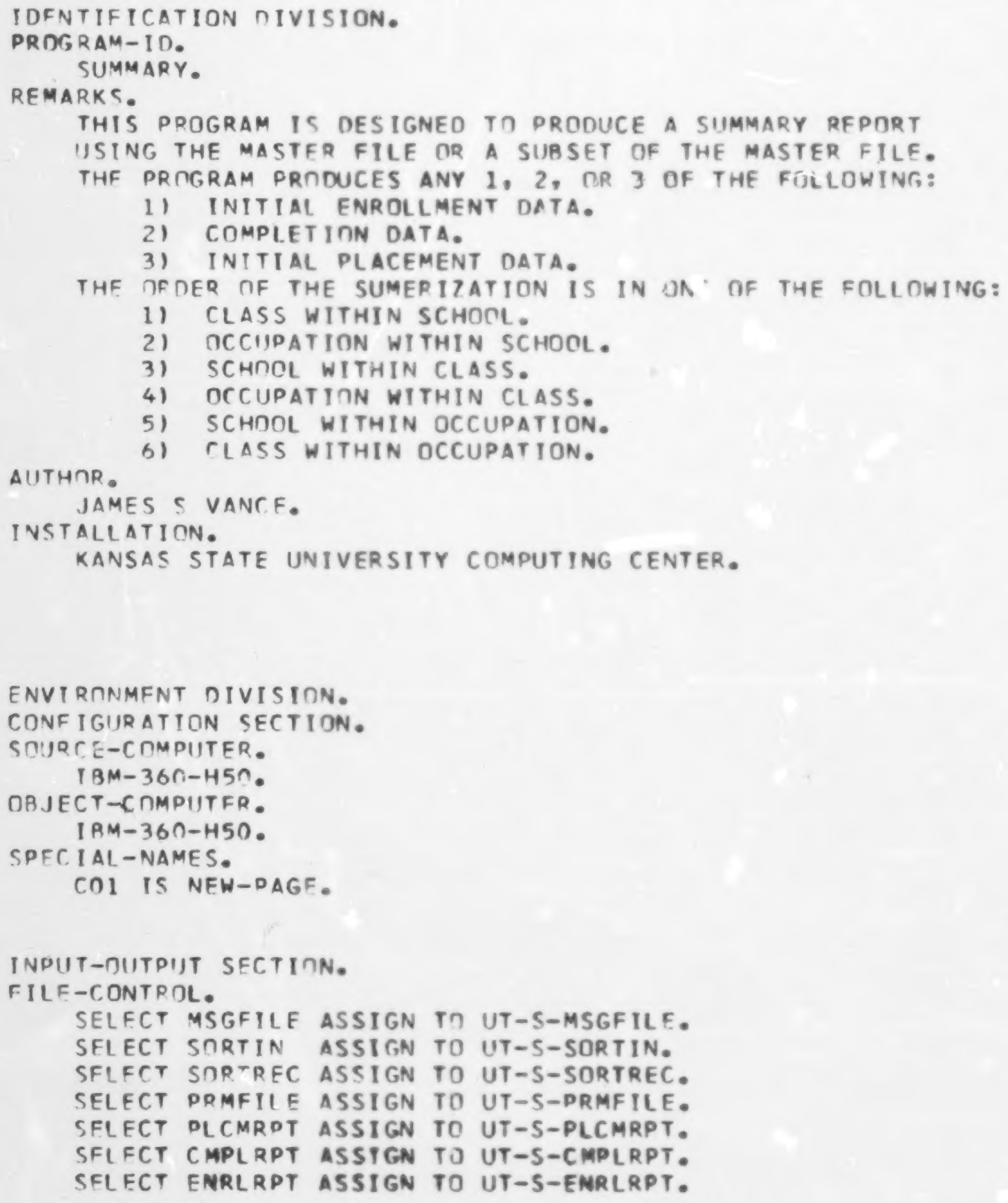
Figure 39: Flow Chart of SUMMARY (Cont)



```
IDENTIFICATION DIVISION.
PROGRAM-ID.
    SUMMARY.
REMARKS.
    THIS PROGRAM IS DESIGNED TO PRODUCE A SUMMARY REPORT
    USING THE MASTER FILE OR A SUBSET OF THE MASTER FILE.
    THE PROGRAM PRODUCES ANY 1, 2, OR 3 OF THE FOLLOWING:
        1)  INITIAL ENROLLMENT DATA.
        2)  COMPLETION DATA.
        3)  INITIAL PLACEMENT DATA.
    THE ORDER OF THE SUMERIZATION IS IN ONE OF THE FOLLOWING:
        1)  CLASS WITHIN SCHOOL.
        2)  OCCUPATION WITHIN SCHOOL.
        3)  SCHOOL WITHIN CLASS.
        4)  OCCUPATION WITHIN CLASS.
        5)  SCHOOL WITHIN OCCUPATION.
        6)  CLASS WITHIN OCCUPATION.
AUTHOR.
    JAMES S VANCE.
INSTALLATION.
    KANSAS STATE UNIVERSITY COMPUTING CENTER.



ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER.
    IBM-360-H50.
OBJECT-COMPUTER.
    IBM-360-H50.
SPECIAL-NAMES.
    C01 IS NEW-PAGE.


INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT MSGFILE ASSIGN TO UT-S-MSGFILE.
    SELECT SORTIN  ASSIGN TO UT-S-SORTIN.
    SELECT SORTREC ASSIGN TO UT-S-SORTREC.
    SELECT PRMFILE ASSIGN TO UT-S-PRMFILE.
    SELECT PLCMRPT ASSIGN TO UT-S-PLCMRPT.
    SELECT CMPLRPT ASSIGN TO UT-S-CMPLRPT.
    SELECT ENRLRPT ASSIGN TO UT-S-ENRLRPT.
```

Figure 40: Source Listing for SUMMARY

```
DATA DIVISION.
FILE SECTION.
FD  PLCMRPT LABEL RECORD IS OMITTED
              DATA RECORD IS PLCMNT-REPORT.
01  PLCMNT-REPORT PIC X(129).
FD  CMPLRPT LABEL RECORD IS OMITTED
              DATA RECORD IS COMPLT-REPORT.
01  COMPLT-REPORT PIC X(129).
FD  ENRLRPT LABEL RECORD IS OMITTED
              DATA RECORD IS ENROLL-REPORT.
01  ENROLL-REPORT PIC X(129).
FD  MSGFILE LABEL RECORD IS OMITTED
              DATA RECORD IS PRINT-LINE.
01  PRINT-LINE PIC X(133).
SD  SORTREC DATA RECORD IS SORT-RCD.
01  SORT-RCD.
    05  MAJOR-KEY PIC X(15).
    05  MINOR-KEY PIC X(15).
    05  THIRD-KEY PIC X(15).
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC 9.
        10  HIGHEST-GRD PIC 9.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC XX.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE PIC X(6).
    05  PROG,
        10  CLASSIFICATION PIC 9.
        10  GRADE-LEVEL PIC 9.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE PIC XXX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
    05  INFO.
        10  FLW-PLC-FLG PIC 9.
        10  COMPL PIC 99.
        10  PLACEMENT.
            15  WORK-STATUS PIC 99.
            15  SCHOOL-STATUS PIC 9.
        10  FOLLOW-UP OCCURS 3 TIMES.
            15  WORK-STAT PIC 99.
            15  SCHOOL-STAT PIC 9.
66  SORT-KEY RENAMES MAJOR-KEY THRU MINOR-KEY.
FD  SORTIN  LABEL RECORDS ARE STANDARD
            BLOCK CONTAINS 55 RECORDS
            RECORD CONTAINS 131 CHARACTERS
            DATA RECORD IS INPUT-RECORD.
01  INPUT-RECORD.
    05  INPUT-KEY PIC X(15) OCCURS 3 TIMES.
    05  STUDENT.
        10  NUMB PIC X(9).
        10  LAST-NAME PIC X(18).
        10  F-INITIAL PIC X.
        10  M-INITIAL PIC X.
        10  RACE PIC X.
        10  HIGHEST-GRD PIC 9.
        10  SEX PIC X.
        10  BIRTH-DATE.
            15  YEAR PIC XX.
            15  MO PIC XX.
            15  DAY PIC XX.
    05  SCHOOL-CODE PIC X(9).
    05  CLASS-CODE PIC X(5).
    05  OCCUP-CODE PIC X(6).
    05  PROG.
        10  CLASSIFICATION PIC 9.
        10  GRADE-LEVEL PIC 9.
        10  HRS-OF-INSTR PIC XX.
    05  COOP-ONLY.
        10  HRS-PER-WEEK PIC XX.
        10  HOURLY-RATE PIC XXX.
    05  HANDICAP.
        10  ANY-KIND PIC X.
        10  DISADV PIC X.
        10  PHYSICAL PIC X.
        10  MENTAL PIC X.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
       05  INFO.
           10  FLW-PLC-FLG PIC 9.
           10  COMPL PIC 99.
           10  PLACEMENT.
               15  WORK-STATUS PIC 99.
               15  SCHOOL-STATUS PIC 9.
           10  FOLLOW-UP OCCURS 3 TIMES.
               15  WORK-STAT PIC 99.
               15  SCHOOL-STAT PIC 9.
FD  PRMFILE LABEL RECORD IS OMITTED
           DATA RECORD IS PARM-CARD.
01  PARM-CARD.
    05  ENROLL-PRINT PIC XXX.
    05  FILLER PIC X.
    05  COMPLT-PRINT PIC XXX.
    05  FILLER PIC X.
    05  PLCMNT-PRINT PIC XXX.
    05  FILLER PIC X.
    05  MAJOR-CATIGORY PIC X(10).
    05  FILLER PIC X.
    05  MINOR-CATIGORY PIC X(10).
    05  FILLER PIC X(47).


 WORKING-STORAGE SECTION.
 77  NUMBER-LINES PIC 9(8) COMP SYNC.
 77  NUMB-PAGES PIC 9(8) COMP SYNC VALUE IS 1.
 77  MAJOR PIC 9(8) COMP SYNC.
 77  MINOR PIC 9(8) COMP SYNC.
 77  THIRD PIC 9(8) COMP SYNC.
 77  TMP-NO PIC 9(8) COMP SYNC.
 77  BLANK-LINE PIC X(129) VALUE IS SPACES.
 01  RACE-TABLE.
     05  RACE-KEY PIC 9(8) COMP SYNC OCCURS 10 TIMES.
 01  DETAL-TALLY.
     05  NAME PIC X(15).
     05  ITEMS.
         10  MALE          PIC 9(8) COMP SYNC.
         10  FEMALE        PIC 9(8) COMP SYNC.
         10  AFRO          PIC 9(8) COMP SYNC.
         10  CAU           PIC 9(8) COMP SYNC.
         10  CHNO          PIC 9(8) COMP SYNC.
         10  IND           PIC 9(8) COMP SYNC.
```

Figure 40: Source Listing for SUMMARY (Cont)

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```
10   OTH          PIC 9(8) COMP SYNC.
10   DISADV       PIC 9(8) COMP SYNC.
10   PHYSICAL     PIC 9(8) COMP SYNC.
10   MENTAL       PIC 9(8) COMP SYNC.
10   GR-LT-7      PIC 9(8) COMP SYNC.
10   GR-7-8       PIC 9(8) COMP SYNC.
10   GR-9         PIC 9(8) COMP SYNC.
10   GR-10        PIC 9(8) COMP SYNC.
10   GR-11        PIC 9(8) COMP SYNC.
10   GR-12        PIC 9(8) COMP SYNC.
10   GR-F-PH      PIC 9(8) COMP SYNC.
10   GR-S-PH      PIC 9(8) COMP SYNC.
10   GR-A-PR      PIC 9(8) COMP SYNC.
10   GR-A-SP      PIC 9(8) COMP SYNC.
10   CMPL         PIC 9(8) COMP SYNC.
10   COCS         PIC 9(8) COMP SYNC.
10   CONT         PIC 9(8) COMP SYNC.
10   TRNS         PIC 9(8) COMP SYNC.
10   TRDP         PIC 9(8) COMP SYNC.
10   DPCS         PIC 9(8) COMP SYNC.
10   DPJO         PIC 9(8) COMP SYNC.
10   DPNE         PIC 9(8) COMP SYNC.
10   SUNK         PIC 9(8) COMP SYNC.
10   MIST         PIC 9(8) COMP SYNC.
10   CDCS         PIC 9(8) COMP SYNC.
10   MIL          PIC 9(8) COMP SYNC.
10   NWSC         PIC 9(8) COMP SYNC.
10   NILF         PIC 9(8) COMP SYNC.
10   OCDS         PIC 9(8) COMP SYNC.
10   FTTO         PIC 9(8) COMP SYNC.
10   FTRO         PIC 9(8) COMP SYNC.
10   FTNO         PIC 9(8) COMP SYNC.
10   PTTO         PIC 9(8) COMP SYNC.
10   PTRO         PIC 9(8) COMP SYNC.
10   PTNO         PIC 9(8) COMP SYNC.
10   UNEM         PIC 9(8) COMP SYNC.
10   UNK          PIC 9(8) COMP SYNC.
10   ERR          PIC 9(8) COMP SYNC.
10   FTRE         PIC 9(8) COMP SYNC.
10   FTNE         PIC 9(8) COMP SYNC.
10   PTRE         PIC 9(8) COMP SYNC.
10   PTNE         PIC 9(8) COMP SYNC.
10   THTR         PIC 9(8) COMP SYNC.
10   NSCH         PIC 9(8) COMP SYNC.
10   TOTAL-NMB    PIC 9(8) COMP SYNC.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
       05  ITEMS-2 REDEFINES ITEMS.
           10  FILLER PIC 9(8) COMP SYNC.
           10  FILLER PIC 9(8) COMP SYNC.
           10  RACE          PIC 9(8) COMP SYNC OCCURS 05 TIMES.
           10  FILLER PIC 9(8) COMP SYNC.
           10  FILLER PIC 9(8) COMP SYNC.
           10  FILLER PIC 9(8) COMP SYNC.
           10  GRADE         PIC 9(8) COMP SYNC OCCURS 10 TIMES.
           10  COMPLETION    PIC 9(8) COMP SYNC OCCURS 11 TIMES.
           10  WORK-STAT     PIC 9(8) COMP SYNC OCCURS 13 TIMES.
           10  SCHL-STAT     PIC 9(8) COMP SYNC OCCURS 06 TIMES.
           10  FILLER PIC 9(8) COMP SYNC.
   01  SUMRY-TALLY.
       05  NAME PIC X(15) VALUE IS "     TOTAL     ".
       05  ITEMS.
           10  MALE          PIC 9(8) COMP SYNC.
           10  FEMALE        PIC 9(8) COMP SYNC.
           10  AFRO          PIC 9(8) COMP SYNC.
           10  CAU           PIC 9(8) COMP SYNC.
           10  CHNO          PIC 9(8) COMP SYNC.
           10  IND           PIC 9(8) COMP SYNC.
           10  OTH           PIC 9(8) COMP SYNC.
           10  DISADV        PIC 9(8) COMP SYNC.
           10  PHYSICAL      PIC 9(8) COMP SYNC.
           10  MENTAL        PIC 9(8) COMP SYNC.
           10  GR-LT-7       PIC 9(8) COMP SYNC.
           10  GR-7-8        PIC 9(8) COMP SYNC.
           10  GR-9          PIC 9(8) COMP SYNC.
           10  GR-10         PIC 9(8) COMP SYNC.
           10  GR-11         PIC 9(8) COMP SYNC.
           10  GR-12         PIC 9(8) COMP SYNC.
           10  GR-F-PH       PIC 9(8) COMP SYNC.
           10  GR-S-PH       PIC 9(8) COMP SYNC.
           10  GR-A-PR       PIC 9(8) COMP SYNC.
           10  GR-A-SP       PIC 9(8) COMP SYNC.
           10  CMPL          PIC 9(8) COMP SYNC.
           10  COCS          PIC 9(8) COMP SYNC.
           10  CONT          PIC 9(8) COMP SYNC.
           10  TRNS          PIC 9(8) COMP SYNC.
           10  TRDP          PIC 9(8) COMP SYNC.
           10  DPCS          PIC 9(8) COMP SYNC.
           10  DPJO          PIC 9(8) COMP SYNC.
           10  DPNE          PIC 9(8) COMP SYNC.
           10  SUNK          PIC 9(8) COMP SYNC.
           10  MIST          PIC 9(8) COMP SYNC.
           10  CDCS          PIC 9(8) COMP SYNC.
           10  MIL           PIC 9(8) COMP SYNC.
           10  NWSC          PIC 9(8) COMP SYNC.
           10  NILF          PIC 9(8) COMP SYNC.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
            10   DCDS          PIC 9(8) COMP SYNC.
            10   FTTO          PIC 9(8) COMP SYNC.
            10   FTRO          PIC 9(8) COMP SYNC.
            10   FTNO          PIC 9(8) COMP SYNC.
            10   PTTO          PIC 9(8) COMP SYNC.
            10   PTRO          PIC 9(8) COMP SYNC.
            10   PTNO          PIC 9(8) COMP SYNC.
            10   UNEM          PIC 9(8) COMP SYNC.
            10   UNK           PIC 9(8) COMP SYNC.
            10   ERR           PIC 9(8) COMP SYNC.
            10   FTRE          PIC 9(8) COMP SYNC.
            10   FTNE          PIC 9(8) COMP SYNC.
            10   PTRE          PIC 9(8) COMP SYNC.
            10   PTNE          PIC 9(8) COMP SYNC.
            10   THTR          PIC 9(8) COMP SYNC.
            10   NSCH          PIC 9(8) COMP SYNC.
            10   TOTAL-NMB     PIC 9(8) COMP SYNC.
       01  TOTAL-TALLY.
           05  ITEMS.
            10   MALE          PIC 9(8) COMP SYNC.
            10   FEMALE        PIC 9(8) COMP SYNC.
            10   AFRO          PIC 9(8) COMP SYNC.
            10   CAU           PIC 9(8) COMP SYNC.
            10   CHNO          PIC 9(8) COMP SYNC.
            10   IND           PIC 9(8) COMP SYNC.
            10   OTH           PIC 9(8) COMP SYNC.
            10   DISADV        PIC 9(8) COMP SYNC.
            10   PHYSICAL      PIC 9(8) COMP SYNC.
            10   MENTAL        PIC 9(8) COMP SYNC.
            10   GR-LT-7       PIC 9(8) COMP SYNC.
            10   GR-7-8        PIC 9(8) COMP SYNC.
            10   GR-9          PIC 9(8) COMP SYNC.
            10   GR-10         PIC 9(8) COMP SYNC.
            10   GR-11         PIC 9(8) COMP SYNC.
            10   GR-12         PIC 9(8) COMP SYNC.
            10   GR-F-PH       PIC 9(8) COMP SYNC.
            10   GR-S-PH       PIC 9(8) COMP SYNC.
            10   GR-A-PR       PIC 9(8) COMP SYNC.
            10   GR-A-SP       PIC 9(8) COMP SYNC.
            10   CMPL          PIC 9(8) COMP SYNC.
            10   COCS          PIC 9(8) COMP SYNC.
            10   CONT          PIC 9(8) COMP SYNC.
            10   TRNS          PIC 9(8) COMP SYNC.
            10   TRDP          PIC 9(8) COMP SYNC.
            10   DPCS          PIC 9(8) COMP SYNC.
            10   DPJO          PIC 9(8) COMP SYNC.
            10   DPNE          PIC 9(8) COMP SYNC.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
           10   SUNK           PIC 9(8) COMP SYNC.
           10   MIST           PIC 9(8) COMP SYNC.
           10   CDCS           PIC 9(8) COMP SYNC.
           10   MIL            PIC 9(8) COMP SYNC.
           10   NWSC           PIC 9(8) COMP SYNC.
           10   NILE           PIC 9(8) COMP SYNC.
           10   DCDS           PIC 9(8) COMP SYNC.
           10   FTTO           PIC 9(8) COMP SYNC.
           10   FTRO           PIC 9(8) COMP SYNC.
           10   FTNO           PIC 9(8) COMP SYNC.
           10   PTTO           PIC 9(8) COMP SYNC.
           10   PTRO           PIC 9(8) COMP SYNC.
           10   PTNO           PIC 9(8) COMP SYNC.
           10   UNEM           PIC 9(8) COMP SYNC.
           10   UNK            PIC 9(8) COMP SYNC.
           10   ERR            PIC 9(8) COMP SYNC.
           10   FTRE           PIC 9(8) COMP SYNC.
           10   FTNE           PIC 9(8) COMP SYNC.
           10   PTRE           PIC 9(8) COMP SYNC.
           10   PTNE           PIC 9(8) COMP SYNC.
           10   THTR           PIC 9(8) COMP SYNC.
           10   NSCH           PIC 9(8) COMP SYNC.
           10   TOTAL-NMB      PIC 9(8) COMP SYNC.
 01   ENROLL-LINE.
      05  FILLER PIC XX VALUE IS SPACES.
      05  NAME PIC X(15).
      05  ITEMS.
          10  TOTAL-NMB PIC ZZZZZ9.
          10  FILLER PIC X VALUE IS SPACE.
          10  MALE PIC ZZZZ9.
          10  FEMALE PIC ZZZZ9.
          10  FILLER PIC X VALUE IS SPACE.
          10  AFRO PIC ZZZZ9.
          10  CAU PIC ZZZZ9.
          10  CHNO PIC ZZZZ9.
          10  IND PIC ZZZZ9.
          10  OTH PIC ZZZZ9.
          10  FILLER PIC X VALUE IS SPACE.
          10  DISADV PIC ZZZZ9.
          10  FILLER PIC X VALUE IS SPACE.
          10  PHYSICAL PIC ZZZZ9.
          10  MENTAL PIC ZZZZ9.
          10  FILLER PIC X VALUE IS SPACE.
          10  GR-LT-7 PIC ZZZZ9.
          10  GR-7-8 PIC ZZZZ9.
          10  GR-9 PIC ZZZZ9.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
            10  GR-10 PIC ZZZZ9.
            10  GR-11 PIC ZZZZ9.
            10  GR-12 PIC ZZZZ9.
            10  GR-F-PH PIC ZZZZ9.
            10  GR-S-PH PIC ZZZZ9.
            10  GR-A-PR PIC ZZZZ9.
            10  GR-A-SP PIC ZZZZ9.
        05  FILLER PIC X VALUE IS SPACE.
    01  COMPLT-LINE.
        05  FILLER PIC X VALUE IS SPACE.
        05  NAME PIC X(15).
        05  ITEMS.
            10  TOTAL-NMB PIC ZZZZZ9.
            10  FILLER PIC X VALUE IS SPACE.
            10  CMPL PIC ZZZZ9.
            10  CDCS PIC ZZZZ9.
            10  CONT PIC ZZZZ9.
            10  TRNS PIC ZZZZ9.
            10  TRDP PIC ZZZZ9.
            10  DPCS PIC ZZZZ9.
            10  DPJO PIC ZZZZ9.
            10  DPNE PIC ZZZZ9.
            10  SUNK PIC ZZZZ9.
            10  MIST PIC ZZZZ9.
            10  CDCS PIC ZZZZ9.
            10  FILLER PIC X VALUE IS SPACE.
            10  GR-LT-7 PIC ZZZZ9.
            10  GR-7-8 PIC ZZZZ9.
            10  GR-9 PIC ZZZZ9.
            10  GR-10 PIC ZZZZ9.
            10  GR-11 PIC ZZZZ9.
            10  GR-12 PIC ZZZZ9.
            10  GR-F-PH PIC ZZZZ9.
            10  GR-S-PH PIC ZZZZ9.
            10  GR-A-PR PIC ZZZZ9.
            10  GR-A-SP PIC ZZZZ9.
    01  PLCMNT-LINE.
        05  FILLER PIC X(6) VALUE IS SPACES.
        05  NAME PIC X(15).
        05  ITEMS.
            10  TOTAL-NMB PIC ZZZZZ9.
            10  FILLER PIC X VALUE IS SPACE.
            10  MIL PIC ZZZZ9.
            10  NWSC PIC ZZZZ9.
            10  NILE PIC ZZZZ9.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
            10  DCDS PIC ZZZZ9.
            10  FTTO PIC ZZZZ9.
            10  FTRO PIC ZZZZ9.
            10  FTNO PIC ZZZZ9.
            10  PTTO PIC ZZZZ9.
            10  PTRO PIC ZZZZ9.
            10  PTNO PIC ZZZZ9.
            10  UNEM PIC ZZZZ9.
            10  UNK PIC ZZZZ9.
            10  ERR PIC ZZZZ9.
            10  FILLER PIC X VALUE IS SPACE.
            10  FTRE PIC ZZZZ9.
            10  FTNE PIC ZZZZ9.
            10  PTRE PIC ZZZZ9.
            10  PTNE PIC ZZZZ9.
            10  THTR PIC ZZZZ9.
            10  NSCH PIC ZZZZ9.
        05  FILLER PIC XXXX VALUE IS SPACES.
    01  ENROLL-GRAND-1.
        05  FILLER PIC X(29) VALUE IS SPACES.
        05  ITEMS.
            10  MALE PIC ZZZZZZ9.
            10  FEMALE PIC ZZZZZZ9.
            10  FILLER PIC X VALUE IS SPACE.
            10  AFRO PIC ZZZZZZ9.
            10  CAU PIC ZZZZZZ9.
            10  CHNO PIC ZZZZZZ9.
            10  IND PIC ZZZZZZ9.
            10  OTH PIC ZZZZZZ9.
            10  FILLER PIC X VALUE IS SPACE.
            10  DISADV PIC ZZZZZZ9.
            10  FILLER PIC X VALUE IS SPACE.
            10  PHYSICAL PIC ZZZZZZ9.
            10  MENTAL PIC ZZZZZZ9.
        05  FILLER PIC X(28) VALUE IS SPACES.
    01  ENROLL-GRAND-2.
        05  FILLER PIC X(26) VALUE IS SPACES.
        05  ITEMS.
            10  TOTAL-NMB PIC ZZZZZZZ9.
            10  FILLER PIC X VALUE IS SPACE.
            10  GR-LT-7 PIC ZZZZZZ9.
            10  GR-7-8 PIC ZZZZZZ9.
            10  GR-9 PIC ZZZZZZ9.
            10  GR-10 PIC ZZZZZZ9.
            10  GR-11 PIC ZZZZZZ9.
            10  GR-12 PIC ZZZZZZ9.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
        10  GR-F-PH PIC ZZZZZZ9.
        10  GR-S-PH PIC ZZZZZZ9.
        10  GR-A-PR PIC ZZZZZZ9.
        10  GR-A-SP PIC ZZZZZZ9.
    05  FILLER PIC X(25) VALUE IS SPACES.
01  COMPLT-GRAND-1.
    05  FILLER PIC X(27) VALUE IS SPACES.
    05  ITEMS.
        10  CMPL PIC ZZZZZZ9.
        10  COCS PIC ZZZZZZ9.
        10  CONT PIC ZZZZZZ9.
        10  TRNS PIC ZZZZZZ9.
        10  TRDP PIC ZZZZZZ9.
        10  DPCS PIC ZZZZZZ9.
        10  DPJO PIC ZZZZZZ9.
        10  DPNE PIC ZZZZZZ9.
        10  SUNK PIC ZZZZZZ9.
        10  MIST PIC ZZZZZZ9.
        10  CDCS PIC ZZZZZZ9.
    05  FILLER PIC X(26) VALUE IS SPACES.
01  COMPLT-GRAND-2.
    05  FILLER PIC X(26) VALUE IS SPACES.
    05  ITEMS.
        10  TOTAL-NMB PIC ZZZZZZZ9.
        10  FILLER PIC X VALUE IS SPACE.
        10  GR-LT-7 PIC ZZZZZZ9.
        10  GR-7-8 PIC ZZZZZZ9.
        10  GR-9 PIC ZZZZZZ9.
        10  GR-10 PIC ZZZZZZ9.
        10  GR-11 PIC ZZZZZZ9.
        10  GR-12 PIC ZZZZZZ9.
        10  GR-F-PH PIC ZZZZZZ9.
        10  GR-S-PH PIC ZZZZZZ9.
        10  GR-A-PR PIC ZZZZZZ9.
        10  GR-A-SP PIC ZZZZZZ9.
    05  FILLER PIC X(25) VALUE IS SPACES.
01  PLCMNT-GRAND-1.
    05  FILLER PIC X(20) VALUE IS SPACES.
    05  ITEMS.
        10  MIL PIC ZZZZZZ9.
        10  NWSC PIC ZZZZZZ9.
        10  NILF PIC ZZZZZZ9.
        10  DCDS PIC ZZZZZZ9.
        10  FTTO PIC ZZZZZZ9.
        10  FTRO PIC ZZZZZZ9.
        10  FTNO PIC ZZZZZZ9.
```

Figure 40: Source Listing for SUMMARY (Cont)

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```
           10   PTTO PIC ZZZZZZ9.
           10   PTRO PIC ZZZZZZ9.
           10   PTNO PIC ZZZZZZ9.
           10   UNEM PIC ZZZZZZ9.
           10   UNK PIC ZZZZZZ9.
           10   ERR PIC ZZZZZZ9.
       05   FILLER PIC X(19) VALUE IS SPACES.
   01  PLCMNT-GRAND-2.
       05   FILLER PIC X(40) VALUE IS SPACES.
       05   ITEMS.
            10   TOTAL-NMB PIC ZZZZZZZ9.
            10   FILLER PIC X VALUE IS SPACE.
            10   FTRE PIC ZZZZZZ9.
            10   FTNE PIC ZZZZZZ9.
            10   PTRE PIC ZZZZZZ9.
            10   PTNE PIC ZZZZZZ9.
            10   THTR PIC ZZZZZZ9.
            10   NSCH PIC ZZZZZZ9.
       05   FILLER PIC X(39) VALUE IS SPACES.



   01  FIRST-REC.
       05   FILLER PIC X(73).
       05   YEAR PIC XXXX.
       05   STATE PIC X(48).
       05   FILLER PIC X(6).
   01  D-TYP-1.
       05   D-TYP-2.
            10   TL-TYP-11 PIC X(35) VALUE IS "VOID".
            10   TL-TYP-12 PIC X(35) VALUE IS "SUMMARY BY SCHOOL WITHI
                 "N OCCUPATION".
            10   TL-TYP-13 PIC X(35) VALUE IS "SUMMARY BY CLASS WITHIN
                 " OCCUPATION ".
            10   TL-TYP-21 PIC X(35) VALUE IS "SUMMARY BY OCCUPATION W
                 "ITHIN SCHOOL".
            10   TL-TYP-22 PIC X(35) VALUE IS "VOID".
            10   TL-TYP-23 PIC X(35) VALUE IS "  SUMMARY BY CLASS WITH
                 "IN SCHOOL    ".
            10   TL-TYP-31 PIC X(35) VALUE IS "SUMMARY BY OCCUPATION W
                 "ITHIN CLASS ".
            10   TL-TYP-32 PIC X(35) VALUE IS "  SUMMARY BY SCHOOL WIT
                 "HIN CLASS    ".
            10   TL-TYP-33 PIC X(35) VALUE IS "VOID".
       05   D-TYP-3 REDEFINES D-TYP-2.
            10   D-TYP-4 OCCURS 3 TIMES.
                 15   TITLE-TYPE PIC X(35) OCCURS 3 TIMES.
```

Figure 40: Source Listing for SUMMARY (Cont)

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```
01  CONTINUE-LINE.
    05  FILLER PIC X(53) VALUE IS SPACES.
    05  FILLER PIC X(76) VALUE IS "(CONTINUED ON NEXT PAGE)".
01  TITLE-1.
    05  FILLER PIC X(41) VALUE IS SPACES.
    05  STATE PIC X(48).
    05  FILLER PIC X(40) VALUE IS SPACES.
01  TITLE-2.
    05  FILLER PIC X(49) VALUE IS SPACES.
    05  FILLER PIC X(80) VALUE IS "DIVISION OF VOCATIONAL EDUCATI
        "ON".
01  TITLE-3.
    05  FILLER PIC X(53) VALUE IS SPACES.
    05  FILLER PIC X(76) VALUE IS "STUDENT ACCOUNTING SYSTEM".
01  TITLE-4.
    05  FILLER PIC X(48) VALUE IS SPACES.
    05  TYPE-REPORT PIC X(35).
    05  FILLER PIC X(46) VALUE IS SPACES.
01  TITLE-5.
    05  FILLER PIC X(18) VALUE IS SPACES.
    05  MAJOR-HEAD.
        10  MAJOR-TYPE PIC X(11).
        10  FILLER PIC XX VALUE IS SPACES.
        10  NAME PIC X(15).
    05  FILLER PIC X(19) VALUE IS "                 FOR ".
    05  YEAR PIC XXXX.
    05  FILLER PIC X(22) VALUE IS "                RUN ON ".
    05  RUN-DATE PIC X(8).
    05  FILLER PIC X(8) VALUE IS "  PAGE ".
    05  PAGE-NUMB PIC 999.
    05  FILLER PIC X(19) VALUE IS SPACES.
01  ENR-LN-1.
    05  FILLER PIC X(60) VALUE IS "                          ---SE
        "X---  CIVIL-RIGHTS-INFORMATION".
    05  FILLER PIC X(69) VALUE IS " DIS-  HANDICAPS  --------GRA
        "DE LEVEL OF VOCATIONAL PROGRAM-------- ".
01  ENR-LN-2.
    05  FILLER PIC XXXX VALUE IS SPACES.
    05  MINOR-TYPE PIC X(10).
    05  FILLER PIC X(60) VALUE IS "   TOTAL  MALE FEML  AFRO  CA
        "U CHNO  IND  OTH  ADVG  PHYS M".
    05  FILLER PIC X(55) VALUE IS "NTL    <7  7-8   9   10   11
        "  12 E-PH S-PH A-PR A-SP ".
01  ENR-LN-3.
    05  FILLER PIC X(26) VALUE IS SPACES.
    05  FILLER PIC X(79) VALUE IS "              ---------------
        "GRADE-LEVEL-OF-VOCATIONAL-PROGRAM--------------- ".
    05  FILLER PIC X(25) VALUE IS SPACES.
01  ENR-LN-4.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
      05  FILLER PIC X(26) VALUE IS SPACES.
      05  FILLER PIC X(79) VALUE IS "   TOTAL      <7    7-8      9
          "    10     11     12    F-PH   S-PH   A-PR   A-SP".
      05  FILLER PIC X(25) VALUE IS SPACES.
  01  ENR-LN-5.
      05  FILLER PIC X(29) VALUE IS SPACES.
      05  FILLER PIC X(73) VALUE IS "     -SEX-          --CIVIL-RI
          "GHTS-INFORMATION--      DIS-     HANDICAPS ".
      05  FILLER PIC X(28) VALUE IS SPACES.
  01  ENR-LN-6.
      05  FILLER PIC X(29) VALUE IS SPACES.
      05  FILLER PIC X(73) VALUE IS "   MALE    FEML    AFRO    CAU
          "  CHNO    IND    OTH    ADVG    PHYS   MNTL ".
      05  FILLER PIC X(28) VALUE IS SPACES.
  01  CMP-LN-1.
      05  FILLER PIC X(60) VALUE IS "                        ------
          "----------COMPLETION INFORMATI".
      05  FILLER PIC X(69) VALUE IS "ON-----------------  --------GR
          "ADE LEVEL OF VOCATIONAL PROGRAM--------".
  01  CMP-LN-2.
      05  FILLER PIC XXX VALUE IS SPACES.
      05  MINOR-TYPE PIC X(10).
      05  FILLER PIC X(60) VALUE IS "    TOTAL  COMP COCS CONT TRNS
          " TRDP DPCS DPJO DPNE SUNK MIST".
      05  FILLER PIC X(56) VALUE IS " DCDS    <7  7-8    9   10   1
          "1   12 F-PH S-PH A-PR A-SP".
  01  CMP-LN-3.
      05  FILLER PIC X(27) VALUE IS SPACES.
      05  FILLER PIC X(77) VALUE IS "    --------------------------C
          "OMPLETION-INFORMATION-------------------------- ".
      05  FILLER PIC X(26) VALUE IS SPACES.
  01  CMP-LN-4.
      05  FILLER PIC X(27) VALUE IS SPACES.
      05  FILLER PIC X(77) VALUE IS "   COMP    COCS    CONT    TRNS
          " TRDP    DPCS    DPJO    DPNE    SUNK    MIST    DCDS".
      05  FILLER PIC X(26) VALUE IS SPACES.
  01  CMP-LN-5.
      05  FILLER PIC X(26) VALUE IS SPACES.
      05  FILLER PIC X(79) VALUE IS "                ---------------
          "GRADE-LEVEL-OF-VOCATIONAL-PROGRAM--------------- ".
      05  FILLER PIC X(25) VALUE IS SPACES.
  01  CMP-LN-6.
      05  FILLER PIC X(26) VALUE IS SPACES.
      05  FILLER PIC X(79) VALUE IS "   TOTAL      <7    7-8      9
          "    10     11     12    F-PH   S-PH   A-PR   A-SP".
      05  FILLER PIC X(25) VALUE IS SPACES.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
01  PLC-LN-1.
    05  FILLER PIC X(60) VALUE IS "
        "----------------------PLACEMENT".
    05  FILLER PIC X(69) VALUE IS " WORK STATUS-------------------
        "---  ---PLACEMENT SCHOOL STATUS---      ".
01  PLC-LN-2.
    05  FILLER PIC X(8) VALUE IS SPACES.
    05  MINOR-TYPE PIC X(10).
    05  FILLER PIC X(60) VALUE IS "    TOTAL    MIL NWSC NILF DCDS
        " FTTO FTRO FTNO PTTO PTRO PTNO".
    05  FILLER PIC X(51) VALUE IS " UNEM  UNK  ERR  FTRF FTNF PTR
        "F PTNF THTR NSCH-     ".
01  PLC-LN-3.
    05  FILLER PIC X(20) VALUE IS SPACES.
    05  FILLER PIC X(91) VALUE IS "     -------------------------
        "-------PLACEMENT-WORK-STATUS----------------------------
        "---- ".
    05  FILLER PIC X(19) VALUE IS SPACES.
01  PLC-LN-4.
    05  FILLER PIC X(20) VALUE IS SPACES.
    05  FILLER PIC X(91) VALUE IS "    MIL    NWSC    NILF    DCDS
        " FTTO    FTRO    FTNO    PTTO    PTRO    PTNO    UNEM    UNK
        "  ERR".
    05  FILLER PIC X(19) VALUE IS SPACES.
01  PLC-LN-5.
    05  FILLER PIC X(40) VALUE IS SPACES.
    05  FILLER PIC X(51) VALUE IS "                 -------PLACEMENT-
        "SCHOOL-STATUS------- ".
    05  FILLER PIC X(39) VALUE IS SPACES.
01  PLC-LN-6.
    05  FILLER PIC X(40) VALUE IS SPACES.
    05  FILLER PIC X(51) VALUE IS "   TOTAL     FTRF    FTNF    PTRF
        "    PTNF    THTR    NSCH".
    05  FILLER PIC X(39) VALUE IS SPACES.


PROCEDURE DIVISION.
    OPEN OUTPUT MSGFILE ENRLRPT CMPLRPT PLCMRPT
         INPUT  PRMFILE SORTIN.
    READ PRMFILE AT END
      MOVE " ** ERROR **  NO PARAMETER CARD." TO PRINT-LINE
      WRITE PRINT-LINE AFTER ADVANCING 2
      GO TO STOP-RUN.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
IF ENROLL-PRINT IS EQUAL TO "YES"
  ALTER TITLE-PLCMNT-CK TO PROCEED TO TITLE-ENROLL
  ALTER TITLE-COMPLT-CK TO PROCEED TO TITLE-ENROLL
  ALTER TITLE-ENROLL-CK TO PROCEED TO TITLE-ENROLL
  ALTER CONTU-PLCMNT-CK TO PROCEED TO CONTU-ENROLL
  ALTER CONTU-COMPLT-CK TO PROCEED TO CONTU-ENROLL
  ALTER CONTU-ENROLL-CK TO PROCEED TO CONTU-ENROLL
  ALTER DETAL-PLCMNT-CK TO PROCEED TO DETAL-ENROLL
  ALTER DETAL-COMPLT-CK TO PROCEED TO DETAL-ENROLL
  ALTER DETAL-ENROLL-CK TO PROCEED TO DETAL-ENROLL
  ALTER TOTAL-PLCMNT-CK TO PROCEED TO TOTAL-ENROLL
  ALTER TOTAL-COMPLT-CK TO PROCEED TO TOTAL-ENROLL
  ALTER TOTAL-ENROLL-CK TO PROCEED TO TOTAL-ENROLL
  ALTER SUMRY-PLCMNT-CK TO PROCEED TO SUMRY-ENROLL
  ALTER SUMRY-COMPLT-CK TO PROCEED TO SUMRY-ENROLL
  ALTER SUMRY-ENROLL-CK TO PROCEED TO SUMRY-ENROLL
ELSE
  IF ENROLL-PRINT IS NOT EQUAL TO "NO "
    MOVE " ** ERROR **  INVALID ENROLLMENT PRINT OPTION." TO
    PRINT-LINE
    WRITE PRINT-LINE AFTER ADVANCING 2
    ALTER STOP-RUN-CK TO PROCEED TO STOP-RUN.
IF COMPLT-PRINT IS EQUAL TO "YES"
  ALTER CONTU-PLCMNT-CK TO PROCEED TO CONTU-COMPLT
  ALTER CONTU-COMPLT-CK TO PROCEED TO CONTU-COMPLT
  ALTER TITLE-PLCMNT-CK TO PROCEED TO TITLE-COMPLT
  ALTER TITLE-COMPLT-CK TO PROCEED TO TITLE-COMPLT
  ALTER DETAL-PLCMNT-CK TO PROCEED TO DETAL-COMPLT
  ALTER DETAL-COMPLT-CK TO PROCEED TO DETAL-COMPLT
  ALTER TOTAL-PLCMNT-CK TO PROCEED TO TOTAL-COMPLT
  ALTER TOTAL-COMPLT-CK TO PROCEED TO TOTAL-COMPLT
  ALTER SUMRY-PLCMNT-CK TO PROCEED TO SUMRY-COMPLT
  ALTER SUMRY-COMPLT-CK TO PROCEED TO SUMRY-COMPLT
ELSE
  IF COMPLT-PRINT IS NOT EQUAL TO "NO "
    MOVE " ** ERROR **  INVALID COMPLETION PRINT OPTION." TO
    PRINT-LINE
    WRITE PRINT-LINE AFTER ADVANCING 2
    ALTER STOP-RUN-CK TO PROCEED TO STOP-RUN.
IF PLCMNT-PRINT IS EQUAL TO "YES"
  ALTER CONTU-PLCMNT-CK TO PROCEED TO CONTU-PLCMNT
  ALTER TITLE-PLCMNT-CK TO PROCEED TO TITLE-PLCMNT
  ALTER DETAL-PLCMNT-CK TO PROCEED TO DETAL-PLCMNT
  ALTER TOTAL-PLCMNT-CK TO PROCEED TO TOTAL-PLCMNT
  ALTER SUMRY-PLCMNT-CK TO PROCEED TO SUMRY-PLCMNT
```

Figure 40: Source Listing for SUMMARY (Cont)

```
ELSE
  IF PLCMNT-PRINT IS NOT EQUAL TO "NO "
    MOVE " ** ERROR **  INVALID PLACEMENT PRINT OPTION." TO
    PRINT-LINE
    WRITE PRINT-LINE AFTER ADVANCING 2
    ALTER STOP-RUN-CK TO PROCEED TO STOP-RUN.
IF MAJOR-CATIGORY IS EQUAL TO "SCHOOL     "
  MOVE 2 TO MAJOR
  MOVE "     SCHOOL:" TO MAJOR-TYPE IN TITLE-5
ELSE
  IF MAJOR-CATIGORY IS EQUAL TO "CLASS      "
    MOVE 3 TO MAJOR
    MOVE "      CLASS:" TO MAJOR-TYPE IN TITLE-5
  ELSE
    IF MAJOR-CATIGORY IS EQUAL TO "OCCUPATION"
      MOVE 1 TO MAJOR
      MOVE "OCCUPATION:" TO MAJOR-TYPE IN TITLE-5
    ELSE
      MOVE " ** ERROR **  INVALID MAJOR CATIGORY." TO
      PRINT-LINE
      WRITE PRINT-LINE AFTER ADVANCING 2
      ALTER STOP-RUN-CK TO PROCEED TO STOP-RUN.
IF MINOR-CATIGORY IS EQUAL TO "SCHOOL     "
  MOVE 2 TO MINOR
  MOVE "  SCHOOL  " TO MINOR-TYPE IN PLC-LN-2
  MINOR-TYPE IN CMP-LN-2 MINOR-TYPE IN ENR-LN-2
ELSE
  IF MINOR-CATIGORY IS EQUAL TO "CLASS      "
    MOVE 3 TO MINOR
    MOVE "   CLASS  " TO MINOR-TYPE IN PLC-LN-2
    MINOR-TYPE IN CMP-LN-2 MINOR-TYPE IN ENR-LN-2
  ELSE
    IF MINOR-CATIGORY IS EQUAL TO "OCCUPATION"
      MOVE 1 TO MINOR
      MOVE "OCCUPATION" TO MINOR-TYPE IN PLC-LN-2
      MINOR-TYPE IN CMP-LN-2 MINOR-TYPE IN ENR-LN-2
    ELSE
      MOVE " ** ERROR **  INVALID MINOR CATIGORY." TO
      PRINT-LINE
      WRITE PRINT-LINE AFTER ADVANCING 2
      GO TO STOP-RUN.
IF MAJOR IS EQUAL TO MINOR
  MOVE " ** ERROR **  MAJOR AND MINOR CATIGORIES ARE NOT DIFF
  "ERENT." TO PRINT-LINE
  WRITE PRINT-LINE AFTER ADVANCING 2
```

Figure 40: Source Listing for SUMMARY (Cont)

```
          GO TO STOP-RUN.
      STOP-RUN-CK.
          GO TO BEGIN-RUN.
      BEGIN-RUN.
          COMPUTE THIRD = 6 - (MAJOR + MINOR).
          MOVE TITLE-TYPE (MAJOR, MINOR) TO TYPE-REPORT IN TITLE-4.
          MOVE CURRENT-DATE TO RUN-DATE.
          MOVE 60000 TO SORT-CORE-SIZE.
          SORT SORTREC
            ASCENDING KEY SORT-KEY
            INPUT PROCEDURE TRANSFORM-KEYS
            OUTPUT PROCEDURE REPORT-PRINT.
          IF SORT-RETURN IS NOT EQUAL TO ZERO
            MOVE 2000 TO RETURN-CODE
            MOVE " ** ERROR ** AN ERROR OCCURED IN THE SORT." TO
            PRINT-LINE
          ELSE
            MOVE " NORMAL TERMINATION." TO PRINT-LINE.
          WRITE PRINT-LINE AFTER ADVANCING 1.
          CLOSE MSGFILE ENRLRPT CMPLRPT PLCMRPT PRMFILE SORTIN.
      STOP-RUN.
          STOP RUN.


      TRANSFORM-KEYS SECTION.
          READ SORTIN INTO FIRST-REC AT END
            MOVE " ** ERROR **  MASTER FILE CONTAINS NO RECORDS." TO
            PRINT-LINE
            WRITE PRINT-LINE AFTER ADVANCING 2
            MOVE 2000 TO RETURN-CODE
            STOP RUN.
          MOVE YEAR IN FIRST-REC TO YEAR IN TITLE-5.
          MOVE STATE IN FIRST-REC TO STATE IN TITLE-1.
      NEXT-RECORD.
          READ SORTIN INTO SORT-RCD AT END GO TO TRANSFORM-EXIT.
          MOVE INPUT-KEY (MAJOR) TO MAJOR-KEY.
          MOVE INPUT-KEY (MINOR) TO MINOR-KEY.
          MOVE INPUT-KEY (THIRD) TO THIRD-KEY.
          RELEASE SORT-RCD.
          GO TO NEXT-RECORD.
      TRANSFORM-EXIT.
          EXIT.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
REPORT-PRINT SECTION.
     RETURN SORTREC AT END GO TO TOTAL-PRINT.
     MOVE MINOR-KEY TO NAME IN DETAL-TALLY.
     MOVE MAJOR-KEY TO NAME IN TITLE-5.
     MOVE 1 TO RACE-KEY (2).
     MOVE 2 TO RACE-KEY (8).
     MOVE 3 TO RACE-KEY (5).
     MOVE 3 TO RACE-KEY (6).
     MOVE 4 TO RACE-KEY (1).
     MOVE 5 TO RACE-KEY (3).
     MOVE 5 TO RACE-KEY (4).
     MOVE 5 TO RACE-KEY (7).
     ITEMS IN SUMRY-TALLY ITEMS IN TOTAL-TALLY.
     PERFORM TITLE-PAGE.
     GO TO PROCESS-RCD.


NEXT-RCD.
     RETURN SORTREC AT END GO TO TOTAL-PRINT.
PROCESS-RCD.
     IF MAJOR-KEY IS NOT EQUAL TO NAME IN TITLE-5
       PERFORM SUMMARY-PRINT
     ELSE
       IF MINOR-KEY IS NOT EQUAL TO NAME IN DETAL-TALLY
         PERFORM DETAIL-PRINT.
     ADD 1 TO TOTAL-NMB IN DETAL-TALLY.
     IF SEX IN SORT-RCD IS EQUAL TO "1"
       ADD 1 TO MALE IN DETAL-TALLY
     ELSE
       IF SEX IN SORT-RCD IS EQUAL TO "2"
         ADD 1 TO FEMALE IN DETAL-TALLY.
     IF RACE IN SORT-RCD IS GREATER THAN "0"
       MOVE RACE-KEY (RACE IN SORT-RCD) TO TMP-NO
       ADD 1 TO RACE IN DETAL-TALLY (TMP-NO).
     IF DISADV IN SORT-RCD IS GREATER THAN "0"
       ADD 1 TO DISADV IN DETAL-TALLY.
     IF MENTAL IN SORT-RCD IS GREATER THAN "0"
       ADD 1 TO MENTAL IN DETAL-TALLY.
     IF PHYSICAL IN SORT-RCD IS GREATER THAN "0"
       ADD 1 TO PHYSICAL IN DETAL-TALLY.
     IF GRADE-LEVEL IN SORT-RCD IS NUMERIC
       ADD 1 GRADE-LEVEL IN SORT-RCD GIVING TMP-NO
       ADD 1 TO GRADE IN DETAL-TALLY (TMP-NO).
     IF COMPL IN SORT-RCD IS GREATER THAN "00" AND LESS THAN "12"
       ADD 1 TO COMPLETION IN DETAL-TALLY (COMPL IN SORT-RCD).
```

Figure 40: Source Listing for SUMMARY (Cont)

```
    IF WORK-STATUS IN SORT-RCD IS GREATER THAN "00" AND LESS
    THAN "14"
      ADD 1 TO WORK-STAT IN DETAIL-TALLY (WORK-STATUS IN
      SORT-RCD).
    IF SCHOOL-STATUS IN SORT-RCD IS GREATER THAN "0" AND LESS
    THAN "7"
      ADD 1 TO SCHL-STAT IN DETAIL-TALLY (SCHOOL-STATUS IN
      SORT-RCD).
    GO TO NEXT-RCD.


TOTAL-PRINT.
    ALTER SUMRY-TITLE-CK TO PROCEED TO SUMRY-EXIT.
    PERFORM SUMMARY-PRINT.
    MOVE "GRAND TOTAL" TO MAJOR-HEAD IN TITLE-5.
TOTAL-PLCMNT-CK.
    GO TO END-TOTAL.
TOTAL-PLCMNT.
    WRITE PLCMNT-REPORT FROM TITLE-1 AFTER ADVANCING NEW-PAGE.
    WRITE PLCMNT-REPORT FROM TITLE-2 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM TITLE-3 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM TITLE-4 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM TITLE-5 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM PLC-LN-3 AFTER ADVANCING 3.
    WRITE PLCMNT-REPORT FROM PLC-LN-4 AFTER ADVANCING 1.
    MOVE CORRESPONDING TOTAL-TALLY TO PLCMNT-GRAND-1.
    WRITE PLCMNT-REPORT FROM PLCMNT-GRAND-1 AFTER ADVANCING 2.
    WRITE PLCMNT-REPORT FROM PLC-LN-5 AFTER ADVANCING 3.
    WRITE PLCMNT-REPORT FROM PLC-LN-6 AFTER ADVANCING 1.
    MOVE CORRESPONDING TOTAL-TALLY TO PLCMNT-GRAND-2.
    WRITE PLCMNT-REPORT FROM PLCMNT-GRAND-2 AFTER ADVANCING 2.
TOTAL-COMPLT-CK.
    GO TO END-TOTAL.
TOTAL-COMPLT.
    WRITE COMPLT-REPORT FROM TITLE-1 AFTER ADVANCING NEW-PAGE.
    WRITE COMPLT-REPORT FROM TITLE-2 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM TITLE-3 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM TITLE-4 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM TITLE-5 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM CMP-LN-3 AFTER ADVANCING 3.
    WRITE COMPLT-REPORT FROM CMP-LN-4 AFTER ADVANCING 1.
    MOVE CORRESPONDING TOTAL-TALLY TO COMPLT-GRAND-1.
    WRITE COMPLT-REPORT FROM COMPLT-GRAND-1 AFTER ADVANCING 2.
    WRITE COMPLT-REPORT FROM CMP-LN-5 AFTER ADVANCING 3.
    WRITE COMPLT-REPORT FROM CMP-LN-6 AFTER ADVANCING 1.
    MOVE CORRESPONDING TOTAL-TALLY TO COMPLT-GRAND-2.
    WRITE COMPLT-REPORT FROM COMPLT-GRAND-2 AFTER ADVANCING 2.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
TOTAL-ENROLL-CK.
    GO TO END-TOTAL.
TOTAL-ENROLL.
    WRITE ENROLL-REPORT FROM TITLE-1 AFTER ADVANCING NEW-PAGE.
    WRITE ENROLL-REPORT FROM TITLE-2 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM TITLE-3 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM TITLE-4 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM TITLE-5 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM ENR-LN-5 AFTER ADVANCING 3.
    WRITE ENROLL-REPORT FROM ENR-LN-6 AFTER ADVANCING 1.
    MOVE CORRESPONDING TOTAL-TALLY TO ENROLL-GRAND-1.
    WRITE ENROLL-REPORT FROM ENROLL-GRAND-1 AFTER ADVANCING 2.
    WRITE ENROLL-REPORT FROM ENR-LN-3 AFTER ADVANCING 3.
    WRITE ENROLL-REPORT FROM ENR-LN-4 AFTER ADVANCING 1.
    MOVE CORRESPONDING TOTAL-TALLY TO ENROLL-GRAND-2.
    WRITE ENROLL-REPORT FROM ENROLL-GRAND-2 AFTER ADVANCING 2.
END-TOTAL.
    EXIT.


CONTINUE-PAGE SECTION.
CONTU-PLCMNT-CK.
    GO TO END-CONTU.
CONTU-PLCMNT.
    WRITE PLCMNT-REPORT FROM CONTINUE-LINE AFTER ADVANCING 1.
CONTU-COMPLT-CK.
    GO TO END-CONTU.
CONTU-COMPLT.
    WRITE COMPLT-REPORT FROM CONTINUE-LINE AFTER ADVANCING 1.
CONTU-ENROLL-CK.
    GO TO END-CONTU.
CONTU-ENROLL.
    WRITE ENROLL-REPORT FROM CONTINUE-LINE AFTER ADVANCING 1.
END-CONTU.
    EXIT.


TITLE-PAGE SECTION.
    MOVE NUMB-PAGES TO PAGE-NUMB IN TITLE-5.
    ADD 1 TO NUMB-PAGES.
TITLE-PLCMNT-CK,
    GO TO END-TITLE.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
TITLE-PLCMNT.
    WRITE PLCMNT-REPORT FROM TITLE-1 AFTER ADVANCING NEW-PAGE.
    WRITE PLCMNT-REPORT FROM TITLE-2 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM TITLE-3 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM TITLE-4 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM TITLE-5 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM PLC-LN-1 AFTER ADVANCING 2.
    WRITE PLCMNT-REPORT FROM PLC-LN-2 AFTER ADVANCING 1.
    WRITE PLCMNT-REPORT FROM BLANK-LINE AFTER ADVANCING 1.
TITLE-COMPLT-CK.
    GO TO END-TITLE.
TITLE-COMPLT.
    WRITE COMPLT-REPORT FROM TITLE-1 AFTER ADVANCING NEW-PAGE.
    WRITE COMPLT-REPORT FROM TITLE-2 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM TITLE-3 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM TITLE-4 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM TITLE-5 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM CMP-LN-1 AFTER ADVANCING 2.
    WRITE COMPLT-REPORT FROM CMP-LN-2 AFTER ADVANCING 1.
    WRITE COMPLT-REPORT FROM BLANK-LINE AFTER ADVANCING 1.
TITLE-ENROLL-CK.
    GO TO END-TITLE.
TITLE-ENROLL.
    WRITE ENROLL-REPORT FROM TITLE-1 AFTER ADVANCING NEW-PAGE.
    WRITE ENROLL-REPORT FROM TITLE-2 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM TITLE-3 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM TITLE-4 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM TITLE-5 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM ENR-LN-1 AFTER ADVANCING 2.
    WRITE ENROLL-REPORT FROM ENR-LN-2 AFTER ADVANCING 1.
    WRITE ENROLL-REPORT FROM BLANK-LINE AFTER ADVANCING 1.
END-TITLE.
    MOVE 9 TO NUMBER-LINES.
TITLE-EXIT.
    EXIT.


DETAIL-PRINT SECTION.
    IF NUMBER-LINES IS GREATER THAN 59
       PERFORM CONTINUE-PAGE
       PERFORM TITLE-PAGE.
    ADD 1 TO NUMBER-LINES.
DETAL-PLCMNT-CK.
    GO TO END-DETAL.
```

Figure 40: Source Listing for SUMMARY (Cont)

```
DETAL-PLCMNT.
     MOVE CORRESPONDING DETAL-TALLY TO PLCMNT-LINE,
     WRITE PLCMNT-REPORT FROM PLCMNT-LINE AFTER ADVANCING 1.
DETAL-COMPLT-CK.
     GO TO END-DETAL.
DETAL-COMPLT.
     MOVE CORRESPONDING DETAL-TALLY TO COMPLT-LINE.
     WRITE COMPLT-REPORT FROM COMPLT-LINE AFTER ADVANCING 1.
DETAL-ENROLL-CK.
     GO TO END-DETAL.
DETAL-ENROLL.
     MOVE CORRESPONDING DETAL-TALLY TO ENROLL-LINE.
     WRITE ENROLL-REPORT FROM ENROLL-LINE AFTER ADVANCING 1.
END-DETAL.
     ADD CORRESPONDING ITEMS IN DETAL-TALLY TO
     ITEMS IN SUMRY-TALLY.
     MOVE ALL LOW-VALUES TO ITEMS IN DETAL-TALLY.
     MOVE MINOR-KEY TO NAME IN DETAL-TALLY.
DETAL-EXIT.
     EXIT.


SUMMARY-PRINT SECTION.
     PERFORM DETAIL-PRINT.
     IF NUMBER-LINES IS GREATER THAN 58
       PERFORM CONTINUE-PAGE
       PERFORM TITLE-PAGE.
SUMRY-PLCMNT-CK.
     GO TO END-SUMRY.
SUMRY-PLCMNT.
     MOVE CORRESPONDING SUMRY-TALLY TO PLCMNT-LINE.
     WRITE PLCMNT-REPORT FROM PLCMNT-LINE AFTER ADVANCING 2.
SUMRY-COMPLT-CK.
     GO TO END-SUMRY.
SUMRY-COMPLT.
     MOVE CORRESPONDING SUMRY-TALLY TO COMPLT-LINE.
     WRITE COMPLT-REPORT FROM COMPLT-LINE AFTER ADVANCING 2.
SUMRY-ENROLL-CK.
     GO TO END-SUMRY.
SUMRY-ENROLL.
     MOVE CORRESPONDING SUMRY-TALLY TO ENROLL-LINE.
     WRITE ENROLL-REPORT FROM ENROLL-LINE AFTER ADVANCING 2.
END-SUMRY.
     ADD CORRESPONDING ITEMS IN SUMRY-TALLY TO
     ITEMS IN TOTAL-TALLY.
     MOVE ALL LOW-VALUES TO ITEMS IN SUMRY-TALLY.
     MOVE MAJOR-KEY TO NAME IN TITLE-5.
```

Figure 40: Source Listing for SUMMARY (Cont)

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```
SUMRY-TITLE-CK.
     GO TO SUMRY-TITLE.
SUMRY-TITLE.
     PERFORM TITLE-PAGE.
SUMRY-EXIT.
     EXIT.
```

Figure 40: Source Listing for SUMMARY (Cont)

b. The format of the divisions are:

1) Year-State - 1 record
   - Col 1 - '0'
   - Col 2-5 - year
   - Col 6-53 - State title
2) Schools
   - Col 1 - '1'
   - Col 2 - blank
   - Col 3-11 - code number
   - Col 12 - blank
   - Col 13-32 - school name
   - Col 33-53 - blank
3) Classes
   - Col 1 - '2'
   - Col 2 - blank
   - Col 3-7 - code number
   - Col 8-12 - blank
   - Col 13-32- class name
   - Col 33-53- blank
4) Occupational Objectives
   - Col 1 - '3'
   - Col 2 - blank
   - Col 3-8 - code number
   - Col 9-12 - blank
   - Col 13-32 - occupational objective name
   - Col 33-53 - blank

Enrollment Form and Card

1. Description and Purpose:

The enrollment form (see Figure 4) is used as the primary method of data gathering. It is designed to be read by an optical page reader and placed on a 7 track tape. The records on the tape are 92 characters long, but only 71 represent actual data. Because of the way the machine reads the forms the tape record is scrambled. The TRANS program accepts enrollment cards as input in addition to the enrollment tape. Since the enrollment card is unscrambled it is easiest to describe it first and then specify the column by column correspondence between the tape and card records.

2. File Structures:

a. The Enrollment Card Record

i) The allowable values on the card correspond directly with the values on the Scan Form except that 0 is used for no and 1 for yes.

ii) The structure is:

Col 1-18	last name
Col 19	first initial
Col 20	middle initial
Col 21	civil rights information
Col 22	highest grade level of student
Col 23	sex
Col 24-29	birth date
Col 30-38	social security number
Col 39-47	school code
Col 48-52	class code
Col 53-58	occupational objective code
Col 59	program classification
Col 60	grade level of program
Col 61-62	hours of instruction per week
Col 63-64	coop work hours per week
Col 65-67	coop hourly wage
Col 68-71	student's handicaps and disadvantages
Col 72-80	blank

b. The Enrollment Tape Record

i) The allowable values on the tape record correspond directly with the values on the scan form except that 0 through 9 stand for A through J.

ii) The column correspondence between the tape and card records is:

tape columns	card columns (or spaces)
1	58
2	62
3	71
4	57

Tape Columns	card columns (or spaces)
5-6	
7	56
8	61
9	70
10	55
11-12	
13	54
14	69
15	53
16	
17	60
18	68
19-20	
21-23	52-50
24	67
25	49
26	
27	48
28	66
29-30	
31	47
32	65
33	46
34	
35-37	45-43
38	59
39	64
40	42
41-42	
43	41
44	63
45	40
46	
47	39

Tape Columns	-	card columns (or spaces)
48		
49		21
50		
51		22
52		
53-61		38-30
62		
63-65		20-18
66		29
67		17
68		28
69		16
70		27
71		15
72		26
73		14
74		25
75		13
76		24
77-81		12-8
82		23
83		7
84		
85-90		6-1
91-92		

New Students File

1. Description and Purpose:

The New Students File is the output file from TRANS and the input to the SORTER program. It is used as a collection point for transformed student records from one or more TRANS runs prior to sorting and merging onto the master file.

2. File Structure:

a. The file has two types of records, header records and student records. There is a header record followed by one or more student records for each separate run of TRANS that has been directed to this file.

b. The structure of the header records are:

Col 1-64 - spaces
Col 65-68 - year
Col 69-116 - state title
Col 117-124- run date (MM/DD/YY)

c. The structure of the student records are:

Col 1-116 - the same as Master File cols 1-116 (see section V-E)
Col 117-124 - run date (MM/DD/YY)

Sorted New Students File

1. Description and Purpose:

The Sorted New Students File is the output file from SORTER and the input to UPDATE. It is a temporary file that has one header record and all of the student records that were in the New Students File. The student records are in ascending order according to school name, class name, and student number and then descending by run date.

2. File Structure:

The structure is the same as the New Students File except that only columns (or characters) 1-116 exist. The run dates have been removed.

Master File

1. Description and Purpose:

The master file is the final updated version of the student records. It is merged with the output from SORTER by the UPDATE program to form a new master. It is the file (or a subset selected by SUBSET) that is used as input to FEDERAL, LISTSTU, and SUMMARY. The master file contains a header record followed by the student records.

2. File Structure:

a. The header record is of the following format:

Col 1-67 - spaces
Col 68-73 - volume name
Col 74-77 - fiscal year

Col 78-125 - state title

Col 126-131 - run date (YYMMDD)

b. The student records are of the following form (along with possible values and descriptions).

1) Col 1-15 occupational objective.

2) Col 16-30 school name.

3) Col 31-45 class name.

4) Col 46-54 social security number.

5) Col 55-72 last name any character string.

6) Col 73 first initial any character (A-Z).

7) Col 74 middle initial any character (A-Z).

8) Col 75 Race

1	American Indian
2	Black American
3	Filipino American
4	Oriental American
5	Mexican American
6	Spanish American
7	Foreign Student
8	Caucasian
9	Other

9) Col 76 Highest Grade Achieved by Student

0	Below Grade 7
1	Grades 7 and 8
2	Grade 9
3	Grade 10
4	Grade 11
5	Grade 12
6	Grade 13
7	Grade 14
8	Grade 15
9	Beyond Grade 15

10) Col 77 Sex

1	Male
2	Female

11) Cols 78-83 Birth Date (YYMMDD)

12) Cols 84-92 School Code.

13) Cols 93-97 Class Code.

14) Cols 98-103 Occupation Codes.

15) Col 104 Classification of Program

0	Exemplary
1	Group Guidance
2	Remedial
3	Work Study
4	Pre-Vocational
5	Pre-Post High
6	Cooperative B
7	Cooperative G
8	Apprenticeship
9	Other (Regular)

16) Col 105 Grade Level of Vocational Program

0	Below Grade 7
1	Grades 7 and 8
2	Grade 9
3	Grade 10
4	Grade 11
5	Grade 12
6	First Year Post High
7	Second Year Post High
8	Adult Preparatory
9	Adult Supplemental

17) Col 106-107 Hours of Instruction per week

18) Col 108-109 Coop work hours per week

19) Col 110-[illegible] Coop Work hourly rate

20) Col 113 Item A (Any Disadvantages or Handicaps)

0	None
1	Disadvantaged or Handicapped

21) Col 114 Item B (Disadvantages)

0	None
1	Economically Disadvantaged

2	Academically Disadvantaged
3	Both of the above

22) Col 115 Item C (Physical Handicaps)

0	None
1	Hard of Hearing
2	Deaf
3	Speech Impaired
4	Vision Impaired (not correctable to 20/20)
5	Crippled

23) Col 116 Item D (Mental Handicaps)

0	None
1	Trainable Mentally Retarded
2	Educationally Mentally Retarded
3	Emotionally Disturbed
4	Learning Disabilities
5	Two or More of the Above

24) Col 117 Flag for indicating if permanently removed from the work force.

0	No
1	Yes

25) Col 118-119 Completion Status

1	Complete Program and Left School
2	Complete Program; Taking Other Course Work
3	Complete This Year of Program; Will Continue Program
4	Transfer; in Similar Program at New School
5	Transfer; Not in Program at New School
6	Drop Program; Continued in School
7	Drop Schooling; Full Time Employment in Training or Related Field
8	Drop Schooling; Not Employed in Field
9	Drop or Transfer; Status Not Known
10	Not in my Program This Year
11	Deceased or Disabled

26) The following work and school status all have the same possible values (as indicated below).

a) Cols 120-121 Initial placement work status
b) Col 122 Initial placement school status
c) Cols 123-124 1st year follow-up work status
d) Col 125 1st year follow-up school status
e) Cols 126-127 3rd year follow-up work status
f) Col 128 3rd year follow-up school status
g) Cols 129-130 5th year follow-up work status
h) Col 131 5th year follow-up school status

Placement and Follow-Up Information, Work Status Values

1	In Armed Forces
2	In School, Not Working
3	Not in Labor Force (marriage, etc)
4	Not in Labor Force (Disabled or Deceased)
5	Work in Trained Occupation (Full Time)
6	Work in Related Occupation (Full Time)
7	Work in Non-Related Occupation (Full Time)
8	Work in Trained Occupation (Part Time)
9	Work in Related Occupation (Part Time)
10	Work in Non-Related Occupation (Part Time)
11	Unemployed, Seeking Employment
12	Status of Student Unknown
13	Record in Error, Student not in Class

Placement and Follow-Up Information, School Status Values

1	School Full Time in Related Voc Tech Field
2	School Full Time in Non-Related Field
3	School Part Time in Related Voc Tech Field
4	School Part Time in Non-Related Field
5	In School in Voc. or Tech Teacher Training
6	Not in School

IMPLEMENTATION

This section of the documentation is concerned with the actual running of the system under the restrictions imposed by the hardware available. Included are examples of all JCL (Job Control Language) and cataloged procedures written to ease the complications in actual run time situations.

Since the procedures employ DUMMY data sets which serve as acceptable substitutes for real data sets for various programs, errors resulting from failure to correctly specify these data sets in the input JCL when they are real may produce little or no notice of the error. Accordingly, these data sets must be specified with great care. The specific instances are CARDIN in TAPE, OPSCAN and CARDIN in CARD, COMPLT and PLCMNT in REPORTS.SUBFILE, REPORTS.SUMMARY and REPORTS.LISTSTU, and SUBSET in REPORTS.KEEP.

Initial Steps in Establishing Data Sets

1. The following initial steps must be taken for the purposes of beginning a new fiscal year or beginning a new state.

2. All programs have been compiled and placed as load modules in the PDS COEBA2.PROGLIB. Note that COEBA2 is a combination of 'CO' (the standard starting symbols established by the Computing Center) and 'EBA2' (the first 4 letters, excluding pass letter, of the account number). All cataloged data sets have been constructed in this manner.

3. In initiating the system for a given state, there are several steps that must be run, including running the INIT program, creating the CODELST file, and cataloging several data sets. In describing the steps the word 'state' should be substituted with the appropriate state code (COEBA2 in the case of Kansas). All tape data sets (such as T7351ED) should have their names substituted with 'T' followed by the volume name.

4. The running of INIT program.
   a. The program is used to establish the SEQNUMB data and the two master files.
   b. The JCL required is presented in Figure 41.
5. Creating the CODELST file.

```
//   standard job card
//stepname  EXEC  RINGWTR,PARM='9350ED,7351ED'
//STEPLIB   DD    DSN=SYS1.USERLIB,DISP=SHR
//stepname  EXEC  PGM=INIT
//STEPLIB   DD    DSN=C0EBA2.PROGLIB,DISP=SHR
//SEQNUMB   DD    DSN=state.SEQNUMB,DISP=(NEW,CATLG),UNIT=SYSDA,
//          DCB=(RECFM=F,LRECL=7,BLKSIZE=7),VOL=SER=111111,SPACE=TRK,1)
//CODELST   DD    DSN=C0EBA2.CODELST,
                  DISP=SHR
//MSGFILE   DD    SYSOUT=A
//FILE1     DD    DSN=state.T9350ED,DISP=(OLD,CATLG),UNIT=TAPE9,
//          DCB=(RECFM=FB,LRECL=131,BLKSIZE=7205),VOL=SER=9350ED
//FILE2     DD    DSN=state.T7351ED,DISP=(OLD,CATLG),UNIT=TAPE7,
//          DCB=(RECFM=FB,LRECL=131,BLKSIZE=7205,TRTCH=ET),VOL=SER=7351ED
//CARDIN    DD    *
9350ED7351ED0000000
/*
```

Figure 41: JCL for INIT

   a. Because this file (in card form) is periodically updated, the cards are usually not in sorted order. For this reason creation of the file is done with a sort procedure.
   b. The JCL required is presented in Figure 42.
6. Sort field cards.
   a. To run the Update Procedure and Federal Report sort field cards are necessary. These have been put in a PDS.
   b. The JCL required is presented in Figure 43.
7. Cataloging Data Sets.
   a. In addition to the above data sets, several others (tape data sets) need to be cataloged.
   b. The JCL necessary is presented in Figure 44.
   c. In addition to cataloging data sets, care must be taken when new tapes are initialized that the header record on the tape be written with correct DCB information. To accomplish this, specify DISP=NEW and provide the DCB information whenever use of a new tape is being made. If this is not done, later uses of the tape may fail because insufficient or inconsistent information is available to the operating system to enable correct execution.

Initial Processing of Enrollment Data

1. The established procedure for transferring data from enrollment forms to 7 track tape is:
   a. Collect forms and magnetic tape (currently volumes 7387ED or 7388ED) together along with'K' and 'Q' sheets.
   b. Make an estimate as to the number of enrollment forms and make appropriate entries into the columns headed by 'DATE SENT' and 'APPROX COUNT' on the control form corresponding to the tape volume. (See "tape and Program Control Forms.")
   c. Deliver tape and forms (addressed to D.P., Emporia) to the Operations Manager, who will forward them to the KSU Inter-Library Loan for shipment to Emporia.
   d. Upon return from Emporia fill in the tape's control sheet block titled 'DATE RECVD'.

```
//   standard job card
//stepname         EXEC    SUPRSORT
//SORT1.SORTOUT  DD  DSN=state.CODELST,DISP=(NEW,CATLG),UNIT=SYSDA,
//                 DCB=(RECFM=FB,LRECL=53,BLKSIZE=7155),VOL=SER=111111,
//                 SPACE=(TRK,20,RLSE)
//SORT1.SYSIN      DD  *
  SORT  FIELDS=(1,11,A),FORMAT=CH
//SORT1.SORTIN     DD *,DCB=LRECL=53
    code file cards
/*
```

Figure 42: JCL for Creating the CODELST File

```
//   standard job card
//stepname  EXEC  PGM=IEBGENER
//SYSPRINT  DD  SYSOUT=A
//SYSIN     DD  DUMMY
//SYSUT2    DD  DSN=C0EBA2.SORTFLD(UPDATE),DISP=(NEW,CATLG),
//              DCB=(RECFM=F,LRECL=80,BLKSIZE=80,DSORG=PO),
//              SPACE=(TRK,(1,,1)),UNIT=SYSDA,VOL=SER=111111
//SYSUT1    DD  *
    SORT FIELDS=(1,39,A),FORMAT=CH  UPDATE
//stepname  EXEC   PGM=IEBGENER
//SYSPRINT  DD     SYSOUT=A
//SYSIN     DD     DUMMY
//SYSUT2    DD     DSN=C0EBA2.SORTFLD(FEDERAL),DISP=SHR
//SYSUT1    DD     *
    SORT FIELDS=(98,6,A),FORMAT=CH    FEDERAL
/*
```

Figure 43: JCL for Sort Field Cards

```
//   standard job card
//stepname  EXEC  PGM=IEFBR14
//NEWSTU1   DD  DSN=state.T9395N1,UNIT=(TAPE9,,DEFER),DISP=(OLD,CATLG),
//              VOL=SER=9395N1,DCB=(RECFM=FB,LRECL=124,BLKSIZE=7192)
//NEWSTU2   DD  DSN=state.T9396N2,UNIT=AFF=NEWSTU1,DISP=(OLD,CATLG),
//              VOL=SER=9396N2,DCB=(RECFM=FB,LRECL=124,BLKSIZE=7192)
//CMPFILE   DD  DSN=state.T7398CM,UNIT=(TAPE7,,DEFER),DISP=(OLD,CATLG),
//              VOL=SER=7398CM,DCB=(RECFM=FB,LRECL=80,BLKSIZE=7280,TRTCH=TE)
//PLCFILE   DD  DSN=state.T7397PF,UNIT=AFF=CMPFILE,DISP=(OLD,CATLG),
//              VOL=SER=7397PF,DCB=(RECFM=FB,LRECL=80,BLKSIZE=7280,TRTCH=TE)
//BACK1     DD  DSN=state.T9511BK,UNIT=AFF=NEWSTU1,DISP=(OLD,CATLG),
//              VOL=SER=9511BK,DCB=(RECFM=FB,LRECL=131,BLKSIZE=7205)
//BACK2     DD  DSN=state.T7512BK,UNIT=AFF=CMPFILE,DISP=(OLD,CATLG),
//              VOL=SER=7512BK,DCB=(RECFM=FB,LRECL=131,BLKSIZE=7205,TRTCH=TE)
```

Figure 44: JCL for Cataloging Data Sets

2. Running of TRANS Program.

a. Because there is a possibility that the input tape may not have been properly closed, a small test program (called TEST) has been written to open and close the tape with a disposition of MOD. If an error is found a return code of 2000 is given. In this case the data may be saved by doing a tape-to-tape copy with the number of buffers set to one. Figure 47 presents a listing of TEST. Since the program TEST is employed only to guard against technical difficulties, it is not considered to be a part of the student accounting system per se and is documented here.

b. In order to help reduce the cost of running the UPDATE program it is good to group several runs of TRANS output together on one tape before performing the update process.

c. There are two catalog procedures for running TRANS. One, CARD, is for running with only card input. The other, TAPE, is for running with tape input or tape and card input.

d. To execute TRANS with only card input use the following cards (for the procedure CARD):

```
//job card
//stepname       EXEC  CARD,parameter list
//TRANS.CARDIN   DD *
    enrollment cards
/*
```

where the parameter list is:

STATE=s	Where s is the state code. Default is STATE=COEBA2 (which is Kansas).
NEWSTU=t	Where t is the tape volume name where new student records are written to. The currently available tapes are 9395N1 and 9396N2. This parameter must be specified.
OUTPUT=d	Where d is the disposition of the new student tape data set. It should be specified as 'SHR' if it is desired to begin a new collection of output records from TRANS. 'MOD'

```
//TAPE       PROC STATE=COEBA2,NEWSTU='*ERR*',SCAN="*ERR*',OUTPUT='*ERR*'
//RINGWTR    EXEC PGM=RINGWTR,PARM=(&NEWSTU,&SCAN)
//STEPLIB    DD DSN=SYS1.USERLIB,DISP=SHR
//TEST       EXEC PGM=TEST
//STEPLIB    DD DSN=COEDA2.PROGLIB,DISP=SHR
//TAPE       DD UNIT=TAPE7,DISP=MOD,LABEL=(1,NL),VOL=(,RETAIN,SER=&SCAN),
//              DCB=(RECFM=F,LRECL=92,BLKSIZE=92,DEN=1,TRTCH=TE),DSN=TAPE
//TRANS      EXEC PGM=TRANS,COND=(0,LT,TEST)
//STEPLIB    DD DSN=COEBA2.PROGLIB,DISP=SHR
//MSGFILE    DD SYSOUT=A
//SEQNUMB    DD DSN=&STATE..SEQNUMB,DISP=SHR
//CODELST    DD DSN=&STATE..CODELST,DISP=SHR
//NEWSTU     DD DSN=&STATE..T&NEWSTU,DISP=(&OUTPUT)
//OPSCAN     DD UNIT=TAPE7,DISP=SHR,LABEL=(1,NL),VOL=SER=&SCAN,
//              DCB=(DEN=1,TRTCH=TE)
//CARDIN     DD DUMMY
//           PEND
```

Figure 45: Tape Catalog Procedure

```
//CARD       PROC STATE=COEBA2,NEWSTU='*ERR*',OUTPUT='*ERR*'
//RINGWTR    EXEC PGN=RINGWTR,PARM=&NEWSTU
//STEPLIB    DD DSN=SYS1.USERLIB,DISP=SHR
//TRANS      EXEC PGM=TRANS
//STEPLIB    DD DSN=COEBA2.PROGLIB,DISP=SHR
//MSGFILE    DD SYSOUT=A
//SEQNUMB    DD DSN=&STATE..SEQNUMB,DISP=SHR
//CODELST    DD DSN=&STATE..CODELST,DISP=SHR
//NEWSTU     DD DSN=&STATE..T&NEWSTU,DISP=(&OUTPUT)
//OPSCAN     DD DUMMY
//CARDIN     DD DUMMY
//           PEND
```

Figure 46: Card Catalog Procedure

```
                     KSU'S PL/I NEATENER AND PRECOMPILER

TEST:     PROC OPTIONS(MAIN):
          DCL TAPE FILE RECORD INPUT:
          DCL IHESARC ENTRY (BIN FIXED(31));
          ON ERROR
          CALL IHESARC(2000);
          OPEN TAPE:
          END TEST
```

Figure 47: Source Listing of TEST

should be specified if the tape contains output records from previous runs of TRANS that have not been run through the update process.

e. To execute TRANS with tape input or tape and card input use the following cards (for the procedure TAPE):

1) with tape input only:

```
// job card
//stepname  EXEC  TAPE, parameter list
/*
```

2) with tape and card input:

```
// job card
//stepname  EXEC TAPE, parameter list
//TRANS.CARDIN  DD *
     enrollment cards
/*
```

3) Where the parameter-list includes all parameters included with the CARD procedure and one addition:

SCAN=t Where t is the volume name of the tape containing the scanned enrollment forms. Currently available are 7387ED and 7388ED.

f. When TRANS has been run the following control sheets need entries made:

1) If tape input (see "Tape and Program Control Forms") was used the control form corresponding to the tape volume should have the entries 'DATE TRANS RUN' and 'TRUE COUNT' filled out. These entries in effect signify that the information on the tape is no longer required and that the tape may be used again for scanning purposes.

2) Make the following entries on the control form (see "Tape and Program Control Forms") corresponding to the New Student tape volume:

   a) 'TRANS RUN DATE'

   b) 'WARNG AND GOOD' the total of the number of records with warnings and the number of records that were good.

c) 'TOTAL TO DATE' - the sum of the 'TOTAL TO DATE' for the last run and the 'WARNG AND GOOD' for this run, if OUTPUT=MOD were specified on the TRANS execute card. If OUTPUT=SHR were specified, the 'TOTAL TO DATE' will equal the 'WARNG AND GOOD' for this run. Note that OUTPUT=SHR indicates that the entry 'UPDATE RUN DATE' should have been completed on the preceding line. This entry indicates that the records on the tape were input into the update process and that all new student records collected to that point are no longer needed.

3) Fill out a complete line on the TRANS program control form (see "Tape and Program Control Forms"). This form is kept for the purpose of building a table for reference in estimating time and lines.

Updating the Master File

1. A catalog procedure called UPDATE has been written to perform the updating process on the master file. A flow chart of this procedure is presented in Figure 48.

2. There are several options that must be specified when executing the update procedure (some are optional). Note that when an estimate of the number of records or cards is needed the estimate must not be low. A low estimate could result in abnormal termination. The following is a list of the options:

STATE=s	Where s is the code used to specify the state concerned. Default is Kansas STATE=COEBA2.
NEWMAS=t	Where t is the tape volume where the new master file is to be placed. This is mandatory. Current tapes are 9350ED and 7351ED.
OLDMAS=t	Where t is the tape volume that the old master file resides. This is mandatory. Current tapes are 9350ED and 7351ED.
NEW=n	Where n is equal to '0' or '1'. '1' means that there are new student records to be processed. '0' means there are no new student records. Default is NEW=0.

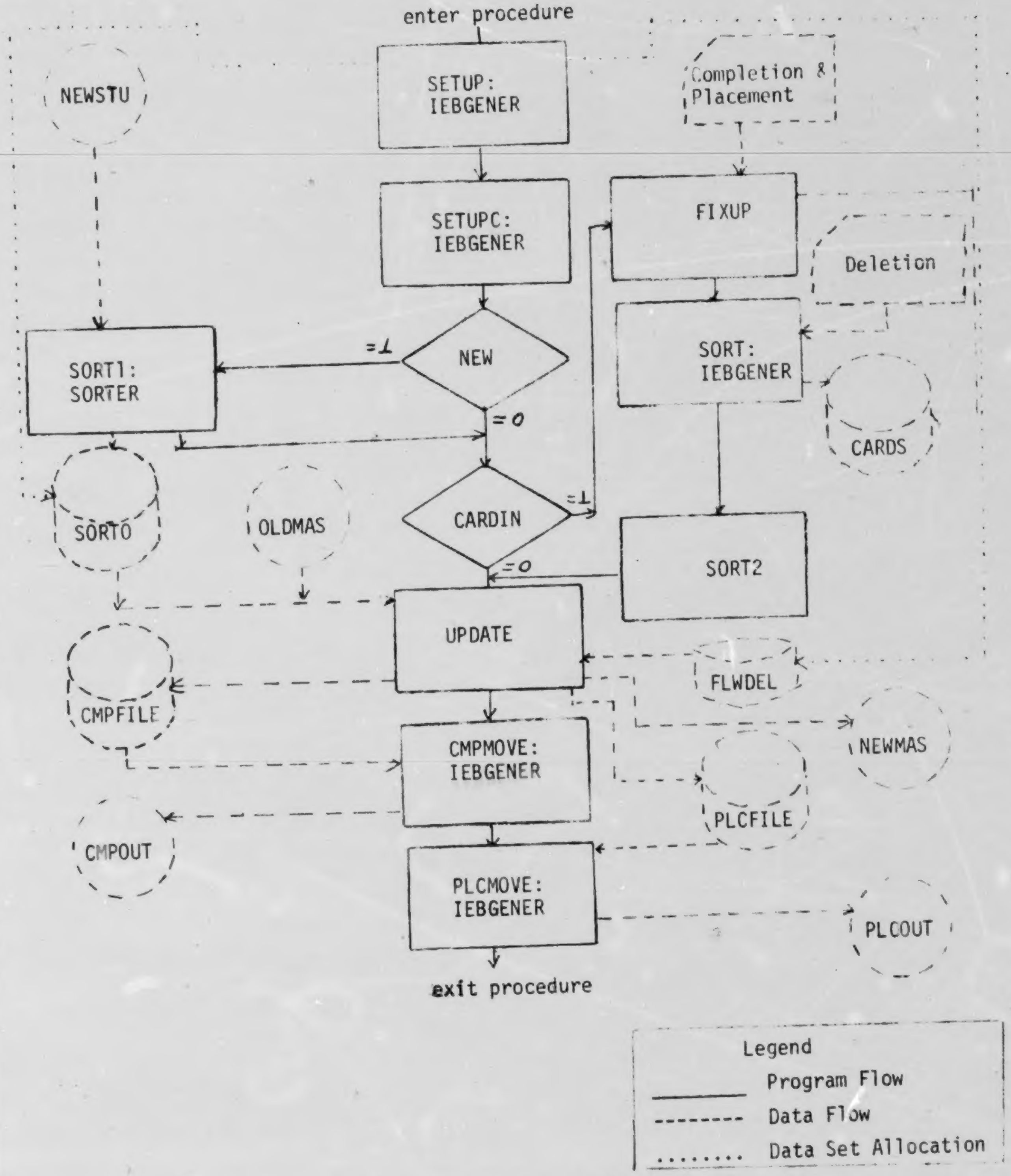

Figure 48: Flow Chart of UPDATE Procedure

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```
//UPDATE     PROC STATE=COEBA2,NEWMAS='*ERR*',OLDMAS='*ERR*',
//              STURD=1,STURD4=1,CARDS=5,CARDS4=1,NEWSTU=,CARDIN=0,
//             CMPOUT=7398CM,PLCOUT=7397PF,CMP=MOD,PLC=MOD,NEW=0
//SETUP      EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=A
//SYSUT1     DD DUMMY,DCB=(RECFM=F,LRECL=124,BLKSIZE=124)
//SYSUT2     DD  DSN=&&SORTO,UNIT=SYSDA,DISP=(NEW,PASS),
//             DCB=(RECFM=FB,LRECL=124,BLKSIZE=7192),
//             SPACE=(TRK,&STURD4)
//SYSIN      DD DUMMY
//SETUPC     EXEC PGM=IEBGENER
//SYSUT1     DD  DUMMY,DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
//SYSUT2     DD  DSN=&&FLWDEL,UNIT=SYSDA,DISP=(NEW,PASS),
//               SPACE=(TRK,&CARDS4),DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
//SYSPRINT DD  SYSOUT=A
//SYSIN      DD  DUMMY
//SORT1      EXEC  PGM=SORTER,COND=((&NEW,LE,SETUP),(0,LT))
//STEPLIB    DD DSN=COEBA2.PROGLIB,DISP=SHR
//SORTLIB    DD DSN=SYS1.SORTLIB,DISP=SHR
//SYSUDUMP DD SYSOUT=A
//SORTWK01 DD UNIT=SYSDA,SPACE=(TRK,(&STURD),,CONTIG)
//SORTWK02 DD UNIT=SYSDA,SPACE=(TRK,(&STURD),,CONTIG)
//SORTWK03 DD UNIT=SYSDA,SPACE=(TRK,(&STURD),,CONTIG)
//SORTWK04 DD UNIT=SYSDA,SPACE=(TRK,(&STURD),,CONTIG)
//SORTWK05 DD UNIT=SYSDA,SPACE=(TRK,(&STURD),,CONTIG)
//SORTWK06 DD UNIT=SYSDA,SPACE=(TRK,(&STURD),,CONTIG)
//SYSOUT     DD SYSOUT=A
//MSGFILE    DD SYSOUT=A
//ERRFILE    DD SYSOUT=A
//SORTIN     DD DSN=&STATE..T&NEWSTU,DISP=SHR
//SORTOUT    DD DSN=&&SORTO,DISP=(OLD,PASS)
//FIXUP      EXEC PGM=FIXUP,COND=((0,LT),(&CARDIN,EQ,SETUP))
//STEPLIB    DD DSN=COEBA2.PROGLIB,DISP=SHR
//CARDS      DD DSN=&&CPRCDS,SPACE=(TRK,&CARDS4),DISP=(NEW,PASS),
//              UNIT=SYSDA,DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
//COMPLT     DD DUMMY,DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
//PLCMNT     DD DUMMY,DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
//SORT       EXEC PGM=IEBGENER,COND=((0,LT),(&CARDIN,EQ,SETUP))
//SYSPRINT DD  SYSOUT=A
//SYSUT1     DD  DUMMY,DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
//SYSUT2     DD  DSN=&&CPRCDS,DISP=(MOD,PASS)
//SYSIN      DD  DUMMY
//SORT2      EXEC PGM=IERRC000,PARM='CORE=100000',
//              COND=((0,LT),(&CARDIN,EQ,SETUP))
//SORTLIB    DD DSN=SYS1.SORTLIB,DISP=SHR
//SYSIDUMP DD SYSOUT=A
//SORTWK01 DD UNIT=SYSDA,SPACE=(TRK,(&CARDS),,CONTIG)
//SORTWK02 DD UNIT=SYSDA,SPACE=(TRK,(&CARDS),,CONTIG)
//SORTWK03 DD UNIT=SYSDA,SPACE=(TRK,(&CARDS),,CONTIG)
```

Figure 49: Source Listing of UPDATE

```
//SORTWK04 DD UNIT=SYSDA,SPACE=(TRK,(&CARDS),,CONTIG)
//SORTWK05 DD UNIT=SYSDA,SPACE=(TRK,(&CARDS),,CONTIG)
//SORTWK06 DD UNIT=SYSDA,SPACE=(TRK,(&CARDS),,CONTIG)
//SYSIN    DD DSN=CCEBA2.SORTFLD(UPDATE),DISP=SHR
//SYSOUT   DD SYSOUT=A
//SORTOUT  DD  DSN=&&FLWDEL,DISP=(OLD,PASS)
//SORTIN   DD DSN=&&CPRCDS,DISP=(OLD,DELETE)
//RINGWTR1 EXEC PGM=RINGWTR,PARM=&NEWMAS,COND=(0,LT)
//STEPLIB  DD DSN=SYS1.USERLIB,DISP=SHR
//UPDATE   EXEC PGM=UPDATE,COND=(0,LT)
//STEPLIB  DD DSN=CCEBA2.PROGLIB,DISP=SHR
//SYSIDUMP DD  SYSOUT=A
//CARDMSG  DD SYSOUT=A
//STULIST DD SYSOUT=A
//MSGFILE  DD SYSOUT=A
//OLDMAS   DD LABEL=(,SL),DISP=SHR,DSN=&STATE..T&OLDMAS
//NEWMAS   DD LABEL=(,SL),DISP=SHR,DSN=&STATE..T&NEWMAS
//NEWSTU   DD DSN=&&SORTO,DISP=(OLD,DELETE)
//CMPFILE  DD UNIT=SYSDA,DISP=(NEW,PASS),SPACE=(TRK,(&STURD,&STURD))
//PLCFILE  DD UNIT=SYSDA,DISP=(NEW,PASS),SPACE=(TRK,(&STURD,&STURD))
//FLWDEL   DD  DSN=&&FLWDEL,DISP=(OLD,DELETE)
//RINGWTR2 EXEC PGM=RINGWTR,PARM=&CMPOUT,COND=(0,LT)
//STEPLIB  DD DSN=SYS1.USERLIB,DISP=SHR
//CMPMOVE  EXEC PGM=IEBGENER,COND=(0,LT)
//SYSPRINT DD SYSOUT=A
//SYSIN    DD DUMMY
//SYSUT1   DD DSN=*.UPDATE.CMPFILE,DISP=(OLD,DELETE)
//SYSUT2   DD DSN=&STATE..T&CMPOUT,DISP=(&CMP),
//             DCB=(RECFM=F,LRECL=80,BLKSIZE=80,TRTCH=TE)
//RINGWTR3 EXEC PGM=RINGWTR,PARM=&PLCOUT,COND=(0,LT)
//STEPLIB  DD DSN=SYS1.USERLIB,DISP=SHR
//PLCMOVE  EXEC PGM=IEBGENER,COND=(0,LT)
//SYSPRINT DD SYSOUT=A
//SYSIN    DD DUMMY
//SYSUT1   DD DSN=*.UPDATE.PLCFILE,DISP=(OLD,DELETE)
//SYSUT2   DD DSN=&STATE..T&PLCOUT,DISP=(&PLC),
//             DCB=(RECFM=F,LRECL=80,BLKSIZE=80,TRTCH=TE)
//         PEND
/*
```

Figure 49: Source Listing of UPDATE (Cont)

CARDIN=n	Where n is equal to '0' or '1'. '1' means that there are placement, follow-up, or deletion cards being processed. '0' means there are no cards to be processed. Default is CARDIN=0.
NEWSTU=t	Where t is the tape volume containing the new student records (if any). This must be specified if NEW=1 was specified.
STURD=n	Where n has been computed as the total number of new student records in thousands (rounded up) multiplied by 4 and added to 2. This must be specified if NEW=1 is specified. For example 2,472 records would result in 3 x 4 + 2 STURD=14.
STURD4=n	Where n has been computed as 4 times the value computed for STURD. Must be specified when STURD is specified.
CARDS=n	Where n has been computed as the total number of completion, placement, follow-up, and deletion cards in thousands times 3 added to 2. For example 1,250 cards would require 2 x 3 + 2 or CARDS=8. Must be specified if any card input is present.
CARDS4=n	Where n has been computed as 4 times the value computed for CARDS. Must be specified if CARDS is specified.
CMPOUT=t	Where t is the name of the tape volume used to collect completion card images. Default is CMPOUT=7398CM.
PLCOUT=t	Where t is the name of the tape volume used to collect placement and follow-up card images. Default is PLCOUT=7397PF.
CMP=d	Where d is equal to 'MOD' or 'SHR'. This is the disposi-

tion of the completion card data set. 'SHR' should be specified if the images currently on the file have been already punched. 'MOD' should be specified if the data set contains cards that have not been punched yet. Default is CMP=MOD.

PLC=d Same as CMP where PLC refers to the data set containing placement and follow-up card images. Default is PLC=MOD.

3. The following is a list of the JCL needed to invoke the update procedure, some being optional. When used it must appear in the following order:

a. Initial JCL (mandatory):

```
//   standard job card
//stepname   EXEC   UPDATE, parms
```

b. If completion cards are being entered:

```
//FIXUP.COMPLT  DD *
     completion cards
```

c. If placement and/or follow-up cards are being entered:

```
//FIXUP.PLCMNT  DD *
     placement and/or follow-up cards
```

d. If a rerun card and/or deletion cards are being entered:

```
//SORT.SYSUT1  DD *
deletion cards
```

4. In making the job card use 1611 (a request for 2 part white forms) as the forms. Normally 2 copies are specified in the copies parameter.

5. Since the original system design envisioned manual keypunching of information into completion, placement, and follow-up cards, the system documentation of "PROGRAMS" does not include the program FIXUP which arose as an afterthought to automate this process. Figure 50 presents the coding for FIXUP. A parameter card is placed into the card stream and all cards until the next parameter card are assumed to all have that same response.

6. Parameter cards have the form:

a. '$' in column 1 of the card.

b. The completion code (for completion cards) or the work and school status (in that order for placement and follow-up cards) punched anywhere on the remainder of the card (if two

```
FIXUP:   PROC OPTIONS(MAIN);                                                      1      1
         DCL IHESARC ENTRY(BIN FIXED(31));                                        1      2
         DCL CODE BIN FIXED(31)STATIC INIT(0);                                    1      3
         DCL 1 PARM STATIC,                                                       1      4
                  2 INFO CHAR(79),                                                1      4
                  2 FILL CHAR(4)INIT(' 0 0');                                     1      4
         DCL PARMS CHAR(83)DEF PARM;                                              1      5
         DCL CARD CHAR(80)BASED(P);                                               1      6
         DCL 1 CARD1 BASED(P),                                                    1      7
                  2 FILL1 CHAR(59).                                               1      7
                  2 TYP CHAR(1),                                                  1      7
                  2 NMBS CHAR(3),                                                 1      7
                  2 FILL2 CHAR(17);                                               1      7
         DCL 1 CARD2 BASED(P),                                                    1      8
                  2 FILL1 CHAR(60),                                               1      8
                  2 NMB1 CHAR(2),                                                 1      8
                  2 NMB2 CHAR(1),                                                 1      8
                  2 FILL2 CHAR(17);                                               1      8
         DCL 1 CONTRL BASED(P),                                                   1      9
                  2 FLAG CHAR(1),                                                 1      9
                  2 INFO CHAR(79);                                                1      9
         DCL PNMB1 PIC '99';                                                      1     10
         DCL PNMB2 PIC '9';                                                       1     11
         DCL CNMB1 BIN FIXED(31);                                                 1     12
         DCL CNMB2 BIN FIXED(31);                                                 1     13
         DCL COMPLT FILE RECORD INPUT;                                            1     14
         DCL PLCMNT FILE RECORD INPUT;                                            1     15
         DCL CARDS FILE RECORD OUTPUT;                                            1     16
         OPEN FILE(CARDS);                                                        1     17
         ON ENDFILE(COMPLT)                                                       1     18
         GO TO START_PLCMNT;                                                      1     19
         ON ENDFILE(PLCMNT)                                                       1     20
         GO TO DONE;                                                              1     21
         READ FILE(COMPLT)SET(P);                                                 1     22
            IF FLAG¬='$' THEN                                                     2     23
                  DO;                                                             3     24
                  PUT SKIP EDIT('THE FIRST CARD IN THE COMPLETION CARDS WAS       3     25
```

Figure 50: Source Listing of FIXUP

```
NOT A PARM CARD.')(A);                                                         3   25
              CODE=2000;                                                       3   26
              END;                                                             3   27
NEXT_COMPLT:                                                                   2   28
           IF FLAG='$' THEN                                                    2   28
              DO;                                                              3   29
              PARM.INFO=CONTRL.INFO:                                           3   30
              GET STRING(PARMS)LIST(CNMB1);                                    3   31
                 IF CNMB1>11|CNMB1<1 THEN                                      4   32
                    DO;                                                        5   33
                    PUT SKIP EDIT('THE FOLLOWING PARM CARD HAS AN INVAL        5   34
ID COMPLETION VALUE:','''',CARD,'''')(A,COL(1),A,A,A);                         5   34
                    CODE=2000;                                                 5   35
                    END;                                                       5   36
                 ELSE                                                          4   37
                 PNMB1=CNMB1;                                                  4   37
              END;                                                             3   38
           ELSE                                                                2   39
              IF TYP¬='O' THEN                                                 3   39
                 DO;                                                           4   40
                 PUT SKIP EDIT('THE FOLLOWING CARD IS NOT A COMPLETION         4   41
CARD, BUT WAS FOUND IN FILE FOR COMPLETION CARDS:','''',CARD,'''')(A,CO        4   41
L(1),A,A,A);                                                                   4   41
                 CODE=2000;                                                    4   42
                 END;                                                          4   43
              ELSE                                                             3   44
                 IF NMBS¬='    ' THEN                                          4   44
                    DO;                                                        5   45
                    PUT SKIP EDIT('THE FOLLOWING COMPLETION CARD HAS IN        5   46
FORMATION PUNCHED IN COMPLETION STATUS COLUMNS:','''',CARD,'''')(A,COL(        5   46
1),A,A,A);                                                                     5   46
                    CODE=2000;                                                 5   47
                    END;                                                       5   48
                 ELSE                                                          4   49
                    DO;                                                        5   49
                    NMB1=PNMB1:                                                5
                    WRITE FILE(CARDS)FROM(CARD);                               5
                    END;                                                       5
```

Figure 50: Source Listing of FIXUP (Cont)

```
         READ FILE(COMPLT)SET(P);                                      1
         GO TO NEXT_COMPLT;                                            1
START_PLCMNT:                                                          1
         READ FILE(PLCMNT)SET(P);                                      1
            IF FLAG¬='$' THEN                                          2
               DO;                                                     3
               PUT SKIP EDIT('THE FIRST CARD IN THE PLACEMENT AND FOLLOW  3
-UP CARDS WAS NOT A PARM CARD.')(A);                                   3
               CODE=2000;                                              3
               END;                                                    3
NEXT_PLCMNT:                                                           2
            IF FLAG='$' THEN                                           2
               DO;                                                     3
               PARM.INFO=CONTRL.INFO;                                  3
               GET STRING(PARMS)LIST(CNMB1,CNMB2);                     3
                  IF CNMB1>13|CNMB1<1 THEN                             4
                     DO;                                               5
                     PUT SKIP EDIT('THE FOLLOWING PARM CARD HAS AN INVAL  5
ID WORK STATUS:','''',CARD,'''')(A,COL(1),A,A,A);                      5
                     CODE=2000;                                        5
                     END;                                              5
                  IF CNMB2>6|CNMB2<1 THEN                              4
                     DO;                                               5
                     PUT SKIP EDIT('THE FOLLOWING PARM CARD HAS AN INVAL  5
ID SCHOOL STATUS:','''',CARD,'''')(A,COL(1),A,A,A);                    5
                     CODE=2000;                                        5
                     END;                                              5
               PNMB1=CNMB1;                                            3
               PNMB2=CNMB2;                                            3
               END;                                                    3
            ELSE                                                       2
               IF TYP>4|TYP<1 THEN                                     3
                  DO;                                                  4
                  PUT SKIP EDIT('THE FOLLOWING CARD IS NOT A PLACEMENT O  4
```

Figure 50: Source Listing of FIXUP (Cont)

```
P FOLLOW-UP CARD:','''',CARD,'''')(A,COL(1),A,A,A);                       4   80
                 CODE=2000;                                                 4   81
                 END;                                                       4   82
              ELSE                                                          3   83
                 IF NMBS¬='   ' THEN                                        4   83
                    DO;                                                     5   84
                    PUT SKIP EDIT('THE FOLLOWING PLACEMENT/FOLLOW-UP CA     5   85
RD HAS INFORMATION PUNCHED IN THE WORK AND SCHOOL STATUS COLUMNS:',''''     5   85
,CARD,'''')(A,COL(1),A,A,A);                                                5   85
                    CODE=2000;                                              5   86
                    END;                                                    5   87
                 ELSE                                                       4   88
                    DO;                                                     5   88
                    NMB1=PNMB1;                                             5   89
                    NMB2=PNMB2;                                             5   90
                    WRITE FILE(CARDS)FROM(CARD);                            5   91
                    END;                                                    5   92
        READ FILE(PLCMNT)SET(P);                                            1   93
        GO TO NEXT_PLCMNT;                                                  1   94
DONE:   CALL IHESARC(CODE);                                                 1   95
        END FIXUP;                                                          1   96
```

Figure 50: Source Listing of FIXUP (Cont)

numbers, separated by at least one blank). "Initial Placement and Follow-Up Card" and "Completion Card" explain which codes which may appear on parameter cards.

7. The general form of a card data deck is:

   parameter card with response(s)
   cards having that response(s)
   parameter card with response(s)
   cards having that response.

8. When an update procedure has been run the following entries should be recorded:

   a. If new student records were used make entries in the column headed by 'UPDATE RUN DATE' (Sample in "Tape and Program Control Forms").
   b. Complete all columns on update control form (Sample in "Tape and Program Control Forms").
   c. Complete a new entry on the master file control form corresponding to the name given as the new master file volume (Sample in "Tape and Program Control Forms").
   d. If adults were among the new student records, make appropriate entries on the completion and placement control forms (Sample in "Tape and Program Control Forms").

9. Once the Update procedure has executed and it has been deemed a good run, the new master file should be backed up. Catalog procedure, called BACKUP, has been written to allow this.

   a. There are several options that must be specified (some having defaults) on the execute card:

STATE=s	Where s is the code used to specify the state. Default is Kansas STATE=COEBA2.
FILE=t	Where t is the master file tape volume being backed up. For Kansas 7351ED or 9350ED.
BACK=t	Where t is the back up tape volume. For Kansas if FILE=7351ED then BACK=9511BK and if FILE=9350ED then BACK=7512BK.

   b. The JCL required is:

```
//   standard job card
//stepname  EXEC  BACKUP,options
```

```
//BACKUP   PROC STATE=COEBA2,FILE='*ERR*',BACK='*ERR*'
//RINGWTR  EXEC PGM=RINGWTR,PARM=&BACK,COND=(0,LT)
//STEPLIB  DD DSN=SYS1.USERLIB,DISP=SHR
//BACKUP   EXEC PGM=IEBGENER,COND=(0,LT)
//SYSPRINT DD SYSOUT=A
//SYSIN    DD DUMMY
//SYSUT1   DD DSN=&STATE..T&FILE,DISP=SHR
//SYSUT2   DD DSN=&STATE..T&BACK,DISP=SHR,DCB=(RECFM=FB,LRECL=131,
//            BLKSIZE=7205,TRTCH=TE)
//         PEND
```

Figure 51: BACKUP Catalog Procedure

c. Note that when designating backup volumes they should be 7 track if the master is 9 track and vice versa. This is so since KSU Computing Center has only one 7 track and one 9 track unit.

Generation of Reports and Subsets

1. There are three reports that may be obtained from the master file or a subset of the master file. A catalog procedure called REPORTS has been written to allow this. The procedure REPORTS is shown in flowchart form in Figure 52.

2. The options that may be specified on the execute card are as follows. Note that when the number of records or cards is required, the estimate must not be low. A low estimate could result in abnormal termination. Only by specifying appropriate options will any subset and/or reports be generated.

SUBSET=n	Where n may equal '0' or '1'. '0' means no subset is to be obtained and '1' means a subset will be asked for. Default is SUBSET=0.
FEDERAL=n	Where n may equal '0' or '1'. '1' means the Federal Report is to be produced. '0' means do not produce it. Default is FEDERAL=0.
SUMMARY=n	Where n may equal '0' or '1'. '1' means the summary report is to be produced. '0' means do not produce it. Default is SUMMARY=0.
LISTSTU=n	Where n may equal '0' or '1'. '1' means the Student Listing will be printed and/or Information Cards will be punched. '0' means this action will not take place. Default is LISTSTU=0.
KEEP=n	Where n may equal '0' or '1'. '1' means the subset requested will be kept. '0' means the subset (if one was obtained) will be discarded. Default is KEEP=0. KEEP=1 may be used only if SUBSET=1 was specified.
RECORDS=n	Where n has been computed as the total records (master file or subset, if requested) divided by 50 and rounded up. This must be specified if SUBSET or FEDERAL are specified as '1'. For example, 8360 records requires RECORDS=168.

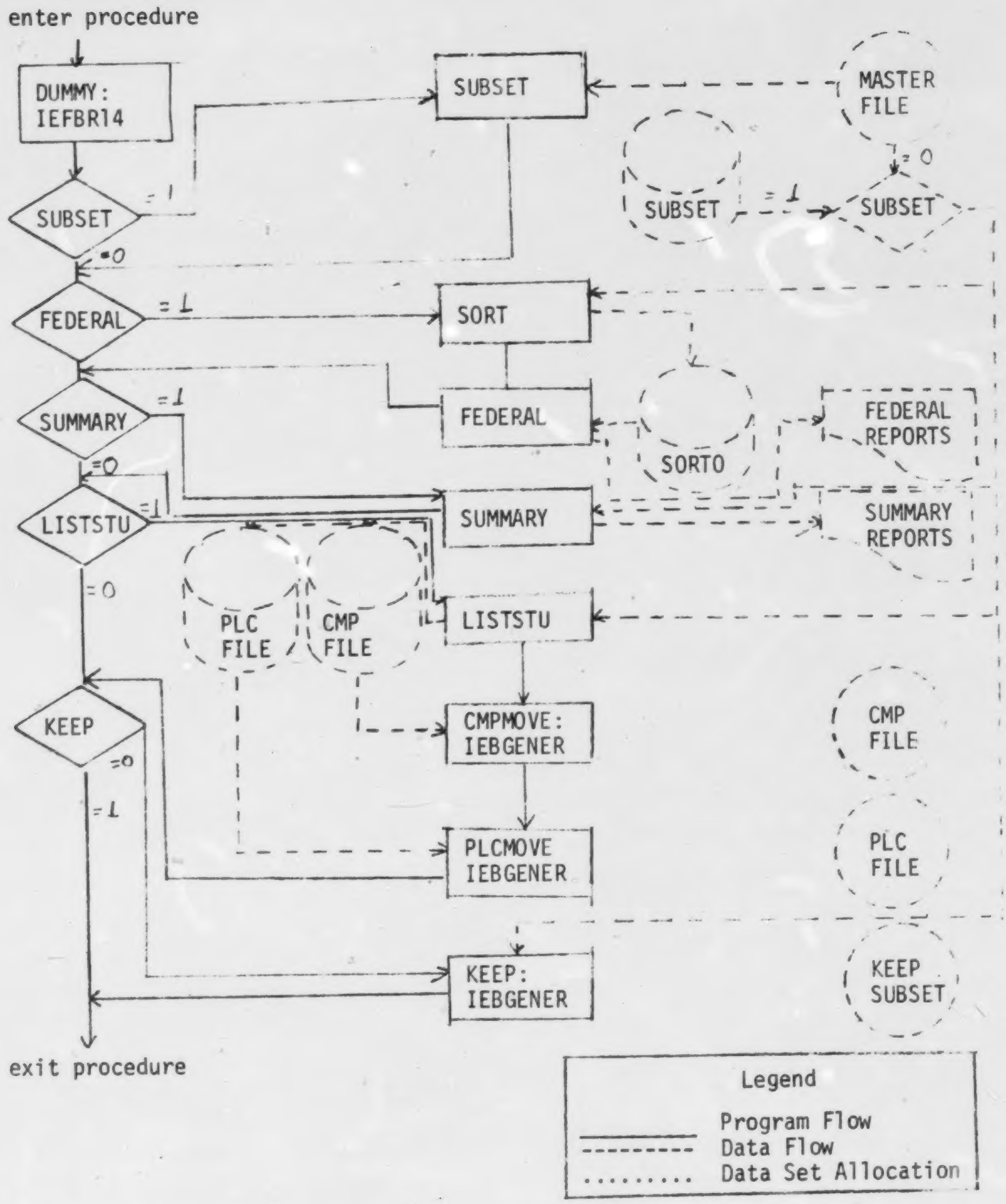

Figure 52: Flow Chart of REPORTS Procedure

```
//REPORTS  PROC SUBSET=0,FEDERAL=0,SUMMARY=0,LISTSTU=0,KEEP=0,
//             SPACE=6,RECORDS=1,CARDS=1,STATE=COEBA2,CMP=MOD,
//             PLC=MOD,CMPOUT=7398CM,PLCOUT=7397PF,TAPE=,FILE=
//DUMMY    EXEC PGM=IEFBR14
//*
//*        THIS PROGRAM IS USED TO SET AN INITIAL CONDITION CODE
//*
//SUBFILE  DD DSN=&&SUBSET,DISP=(NEW,PASS),UNIT=SYSDA,
//             SPACE=(TRK,&RECORDS)
//SUBSET   EXEC PGM=SUBSET,COND=(&SUBSET,LE)
//STEPLIB  DD DSN=COEBA2.PROGLIB,DISP=SHR
//MSGFILE  DD SYSOUT=A
//MASREC   DD DSN=&STATE..T&FILE,DISP=SHR
//SUBREC   DD DSN=&&SUBSET,DISP=(OLD,PASS),UNIT=SYSDA
//PRMFILE  DD DUMMY
//*
//*
//SORT     EXEC PGM=IERRCO00,PARM='CORE=100000',COND=(&FEDERAL,LE)
//SORTLIB  DD DSN=SYS1.SORTLIB,DISP=SHR
//SYSOUT   DD SYSOUT=A
//SYSIN    DD DSN=COEBA2.SORTFLD(FEDERAL),DISP=SHR
//SORTWK01 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK02 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK03 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK04 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK05 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK06 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTOUT  DD DSN=&&SORTO,DCB=(RECFM=FB,LRECL=131,BLKSIZE=7205),
//             SPACE=(TRK,&RECORDS),UNIT=SYSDA,DISP=(NEW,PASS)
//SORTIN   DD DDNAME=INPUT&SUBSET
//INPUT0   DD DSN=&STATE..T&FILE,DISP=SHR,UNIT=(,,DEFER),
//             DCB=(RECFM=FB,LRECL=131,BLKSIZE=7205),VOL=(,RETAIN)
//INPUT1   DD DSN=&&SUBSET,DISP=(OLD,PASS),
//             DCB=(RECFM=FB,LRECL=131,BLKSIZE=7205)
//FEDERAL  EXEC PGM=FEDERAL,COND=(&FEDERAL,LE)
//STEPLIB  DD DSN=COEBA2.PROGLIB,DISP=SHR
//SYSOUT   DD SYSOUT=A
//SORTLIB  DD DSN=SYS1.SORTLIB,DISP=SHR
//SORTWK01 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK02 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK03 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK04 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK05 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK06 DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTIN   DD DSN=&&SORTO,DISP=(OLD,PASS),UNIT=(,,DEFER)
//RPT3138  DD SYSOUT=A
//RPT3139  DD SYSOUT=A
//*
//*
```

Figure 53: Source Listing of REPORTS

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```
//SUMMARY   EXEC PGM=SUMMARY,COND=(&SUMMARY,LE)
//STEPLIB   DD DSN=COEBA2.PROGLIB,DISP=SHR
//SYSUDUMP  DD SYSOUT=A
//SORTLIB   DD DSN=SYS1.SORTLIB,DISP=SHR
//SYSOUT    DD SYSOUT=A
//SORTWK01  DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK02  DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK03  DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK04  DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK05  DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//SORTWK06  DD UNIT=SYSDA,DISP=(NEW,DELETE),SPACE=(TRK,&SPACE,,CONTIG)
//MSGFILE   DD SYSOUT=A
//PLCMRPT   DD SYSOUT=A
//CMPLRPT   DD SYSOUT=A
//ENRLRPT   DD SYSOUT=A
//SORTIN    DD DDNAME=INPUT&SUBSET
//INPUT0    DD DSN=&STATE..T&FILE,DISP=SHR,UNIT=(,,DEFER),VOL=(,RETAIN)
//INPUT1    DD DSN=&&SUBSET,DISP=(OLD,PASS)
//PRMFILE   DD DUMMY
//*
//*
//LISTSTU   EXEC PGM=LISTSTU,COND=(&LISTSTU,LE)
//STEPLIB   DD DSN=COEBA2.PROGLIB,DISP=SHR
//MSGFILE   DD SYSOUT=A
//STULIST   DD SYSOUT=A
//MASREC    DD DDNAME=INPUT&SUBSET
//INPUT0    DD DSN=&STATE..T&FILE,DISP=SHR,UNIT=(,,DEFER)
//INPUT1    DD DSN=&&SUBSET,DISP=(OLD,PASS)
//CMPFILE   DD DSN=&&CMPFL,UNIT=SYSDA,SPACE=(TRK,&CARDS),DISP=(,PASS)
//PLCFILE   DD DSN=&&PLCFL,UNIT=SYSDA,SPACE=(TRK,&CARDS),DISP=(,PASS)
//PRMFILE   DD DUMMY
//CMPRNG    EXEC PGM=RINGWTR,PARM=&CMPOUT,COND=(&LISTSTU,LE)
//STEPLIB   DD DSN=SYS1.USERLIB,DISP=SHR
//CMPMOVE   EXEC PGM=IEBGENER,COND=(&LISTSTU,LE)
//SYSPRINT  DD SYSOUT=A
//SYSIN     DD DUMMY
//SYSUT1    DD DSN=&&CMPFL,DISP=(OLD,PASS)
//SYSUT2    DD DSN=&STATE..T&CMPOUT,DISP=(&CMP),DCB=TRTCH=TE
//PLCRNG    EXEC PGM=RINGWTR,PARM=&PLCOUT,COND=(&LISTSTU,LE)
//STEPLIB   DD DSN=SYS1.USERLIB,DISP=SHR
//PLCMOVE   EXEC PGM=IEBGENER,COND=(&LISTSTU,LE)
//SYSPRINT  DD SYSOUT=A
//SYSIN     DD DUMMY
//SYSUT1    DD DSN=&&PLCFL,DISP=(OLD,PASS)
//SYSUT2    DD DSN=&STATE..T&PLCOUT,DISP=(&PLC),DCB=TRTCH=TE
//*
//*
```

Figure 53: Source Listing of REPORTS (Cont)

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```
//KEEPRNG   EXEC PGM=RINGWTR,PARM=&TAPE,COND=(&KEEP,LE)
//STEPLIB   DD DSN=SYS1.USERLIB,DISP=SHR
//KEEP      EXEC PGM=IEBGENER,COND=(&KEEP,LE)
//SYSIN     DD DUMMY
//SYSPRINT  DD SYSOUT=A
//SYSUT1    DD DSN=&&SUBSET,DISP=(OLD,PASS)
//SYSUT2    DD DDNAME=SUBSET
//SUBSET    DD DUMMY,DCB=(RECFM=FB,LRECL=131,BLKSIZE=7205,
//             DEN=2,TRTCH=TE)
//          PEND
```

Figure 53: Source Listing for REPORTS (Cont)

SPACE=n	Where n has been computed as the total number of records (master file or requested subset) in thousands multiplied by 4 and added to 2. This must be specified if FEDERAL or SUMMARY are specified as '1'. For example, 8360 records would be 9x4+2 or SPACE=38. Default is SPACE=6.
CARDS=n	Where n has been computed as the total expected completion or follow-up cards to be produced from LISTSTU divided by 90 and rounded up. This must be specified if LISTSTU is specified as '1'.
CMP=s	Where s may equal 'MOD' or 'SHR'. This is the disposition of the completion card data set. 'SHR' should be specified if the data set is to be restarted. 'MOD' should be specified if the completion card data set is to be added to. Consideration should be given to this whenever LISTSTU is specified as '1'. Default is CMP=MOD.
PLC=s	Same as CMP where PLC is concerned with the tape data set containing placement and follow-up cards. Default is PLC=MOD.
CMPOUT=t	Where t is the name of the tape volume that completion cards are written to. Default is CMPOUT=7398CM.
PLCOUT=t	Where t is the name of the tape volume that placement and follow-up cards are written to. Default is PLCOUT=7397PF.
FILE=n	Where n is the master file being used as input to the subset program or one of the three report programs. This is mandatory. Current files are 9350ED and 7351ED.
TAPE=n	Where n is the volume name of the tape used to contain the subset if KEEP=1 is specified.
STATE=s	Where s is the code used to specify the state concerned. Default is Kansas STATE=COEBA2.

3. The following is a list of the additional JCL needed for each step that can be executed. When used it must appear in the order shown.

a. Initial JCL (mandatory):

```
// standard job card
//stepname  EXEC  REPORTS, parms
```

b. If SUBSET=1 is used:

```
//SUBSET.PRMFILE DD *
```

subset parameter card (See "Tape and Program Control Forms").

c. If FEDERAL=1 is used, no additional JCL is required.

d. If SUMMARY=1 is used:

```
//SUMMARY.PRMFILE DD *
```

summary parameter card (See "Program Summary").

e. If LISTSTU=1 is used:

```
//LISTSTU.PRMFILE DD *
```

student list/punch parameter card (See "Production Files").

f. If KEEP=1 is used:

```
//KEEP.SUBSET DD DSN=name, DISP=disp,
//    UNIT=unit, VOL=SER=vol
```

where:

name is the data set name.
disp is the disposition of the data set.
unit is the unit where the volume resides.
vol is the volume name where the data set is.

4. Note that if SUBSET=1 is specified, all reports and listings requested in the same job step are performed on the resulting subset.

5. If LISTSTU=1 was specified and the option used included punching of any completion, placement, or follow-up cards appropriate entries should be made on the completion and/or follow-up control forms (see example "Tape and Program Control Forms").

<u>Punching and Interpreting Completion, Placement, and Follow-Up Cards</u>

1. Use the following JCL when desiring to get the completion data set or placement and follow-up data set punched:

```
//   standard job card
//stepname       EXEC   SUPRSORT, parm
//SORT1.SORTOUT  DD SYSOUT=B, DCB=(RECFM=F, LRECL=80, BLKSIZE=80, BUFNO=1).
//SORT1.SORTIN   DD DSN=name, DISP=SHR
//SORT1.SYSIN    DD *
     SORT FIELDS=(1, 39, A),FORMAT=CH
```

where:

parm is SPACE=n where n is computed as 1 1/2 times the number of cards expected in hundreds added to 12.

name is COEBA2.T7398CM for completion cards and COEBA2.T7497PF for placement and follow-up cards.

2. Note that an appropriate number should be placed in the cards parameter of the job card. This job must be submitted to the Manager of Operations along with a sufficient number of special cards (see "Completion Cards" and "Initial Placement and Follow-Up Cards").

3. After punching, an appropriate entry should be made on the control form corresponding to the tape volume punched (see "Tape and Program Control Forms") under the column 'DATE PUNCHED'.

4. The punched cards are interpreted by the Administrative Data Processing Center. Contact the Manager of Operations at A.D.P. for arrangements. A special charge sheet should be taken along (see Figure 54).

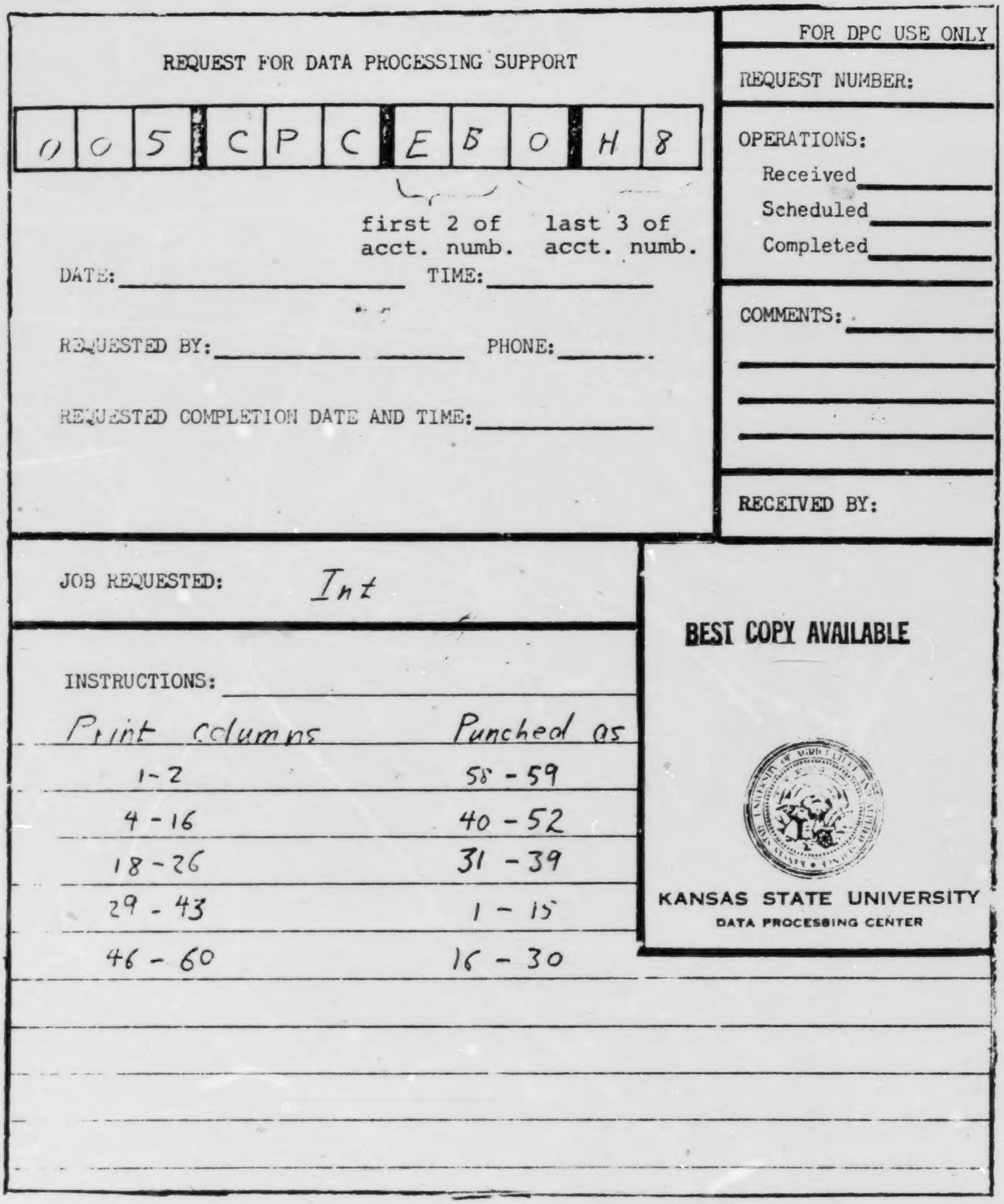
Tape and Program Control Forms

The following are examples of the control forms previously referenced.

Figure 55

TRANS Program Control Form for
State COEBAZ (Kansas)

DATE RUN	LINES	TIME	NUMB ERROR	NUMB WARNG	NUMB GOOD	TOTAL RCDS	NUMB CARDS
2/22/73	4936	2.4	224	419	2453	3096	0
3/10/73	3572	1.9	129	306	1793	2228	114



REQUEST FOR DATA PROCESSING SUPPORT

0	0	5	C	P	C	E	B	0	H	8

first 2 of acct. numb.
last 3 of acct. numb.

DATE: ______ TIME: ______

REQUESTED BY: ______ ______ PHONE: ______

REQUESTED COMPLETION DATE AND TIME: ______

FOR DPC USE ONLY

REQUEST NUMBER:

OPERATIONS:
Received ______
Scheduled ______
Completed ______

COMMENTS: ______

RECEIVED BY:

JOB REQUESTED: Int

INSTRUCTIONS:

Print columns	Punched as
1-2	58-59
4-16	40-52
18-26	31-39
29-43	1-15
46-60	16-30

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KANSAS STATE UNIVERSITY
DATA PROCESSING CENTER

Figure 54: Charge Sheet for COMPUTER CENTER

Figure 56

Enrollment Forms Control Form
for Tape 7387ED

DATE SENT	APPROX COUNT	DATE RECVD	DATE TRANS RUN	TRUE COUNT
2/18/73	3000	2/22/73	2/22/73	3096
3/6/73	2000	3/9/73	3/10/73	2114
3/27/73	4500			

Figure 57

New Student Control Form
for Tape 939SN1

TRANS RUN DATE	WARNG AND GOOD	TOTAL TO DATE	UPDATE RUN DATE
2/22/73	2872	2872	
3/10/73	2099	4971	3/12/73

Figure 58

Page 1 of 2 of UPDATE Program Control Form for State COEBAZ (Kansas)

DATE RUN	LINES	TIME	FLWDEL CARD ERRORS	NUMB CMP, PLC & FLW	NUMB ADULT	NUMB DUPL	NUMB NEW DELETE	NUMB RE-PLACE
3/12/73	19516	4.2	1	0	230	124	10	0

Figure 58 (continued)

Page 2 of 2 of UPDATE Program Control Form for State COEBAZ

OLD TOTAL	NUMB OLD DELETE	NUMB NEW	NEW TOTAL	NEW VOLUME NAME
0	0	4837	4837	73S1ED

Figure 59

Master File Control Form for
Tape 7351ED (Back Up-9511BK)

DATE UPDATE RUN	RCDS ON FILE	DATE BACK UP
3/12/73	4837	3/16/73

Figure 60

Completion Control Form for
Tape 7398CM

DATE RUN	UPDATE OR LISTSTU	NUMB RCDS	TOTAL TO DATE	DATE PUNCHED
3/12/73	UPDATE	230	230	
3/28/73	LISTSTW	4607	4837	3/27/73

Production Tapes

The table summarizes the tapes currently in use in the system.

Production Tapes for the Student Accounting System

Purpose	Tape Id.	Length (ft)
Master File (1)	9350ED	2400
Master File (2)	7351ED	2400
Enrollment Forms (1)	7387ED	2400
Enrollment Forms (2)	7388ED	2400
New Students (1)	9395N1	1200
New Students (2)	9396N2	1200
Completion File	7398CM	1200
Placement File	7397PF	1200
Source and Codelist	9510SD	2400

Chapter 3

NON-PUBLIC SUPPLY MODULE

INTRODUCTION

Although training programs funded under the Vocational Education Amendments of 1968 produce a large percentage of the workers needed in the labor force, other manpower supply sources also contribute significantly. In the past, these other sources have included private schools, on-job-training, MDTA programs, apprenticeship training, Bureau of Corrections programs, military training and other public training not funded under the 1968 Amendments.

In the last few years, draftees who have been trained by the military and are returning to civilian life have constituted a major supply source for the civilian labor market. This supply source should decrease in significance as the nation moves towards voluntary military service. Military authorities in Kansas have indicated that returning military personnel will not be a significant supply source in the future, hence, they are not considered in this module.

Although there are major exceptions, on-job-training seems to be a supply source only when other sources do not meet the manpower demand. In light of this fact, supply forecasting for this source is extremely difficult. Based on the assumption that on-job-training operates in lieu of available trained personnel, it is not absolutely necessary that it be considered in planning future programs. Since planning can be conducted without considering this source and data from this source is difficult to estimate, this module does not consider on-job-training.

This module presents three subsystems designed to collect supply data from (1) public programs not funded under the 1968 Vocational Education Amendments, (2) private schools, and (3) MDTA programs, apprenticeship programs and Bureau of Correction programs.

SYSTEM DESCRIPTION

Submodule 1 - Supply from Public Programs not Funded Under the 1968 Vocational Education Amendments

Public programs not funded under the 1968 Vocational Education Amendments produce significant manpower in clerical occupations (school districts), agriculture (Kansas State University), and health occupations (particularly in the registered nurse field from hospitals and colleges). Data on this training is obtained from the Kansas State Department of Education for school districts, from Kansas State University on agriculture graduates, and from the individual colleges and hospitals for registered nurses.

The Oklahoma State Department of Vocational and Technical Education studied the availability of graduates from non-reimbursed clerical programs and concluded that about ten percent of the graduates from these programs were seeking employment in clerical areas. Kansas State University reports that virtually all agriculture graduates are seeking employment with about twenty-five percent entering production agriculture occupations, ten percent entering agriculture mechanics occupations, nine percent entering horticulture occupations, fifty percent entering agriculture sales and service occupations and the remainder entering conservation occupations. Hospitals and colleges report that over eighty percent of the registered nurse graduates enter the labor force.

A public school training area that is not considered to be a primary source of manpower supply is Practical Arts training. Instructors in this discipline do not consider their courses to be job preparation and very few of their graduates enter the labor force in related occupations.

To estimate supply from these sources, the average graduate output for the past several years is calculated and factored to reflect manpower available for employment. Since Kansas State University serves the entire state of Kansas, regionalization of the data is done by prorating on the basis of number of farmers in the region.

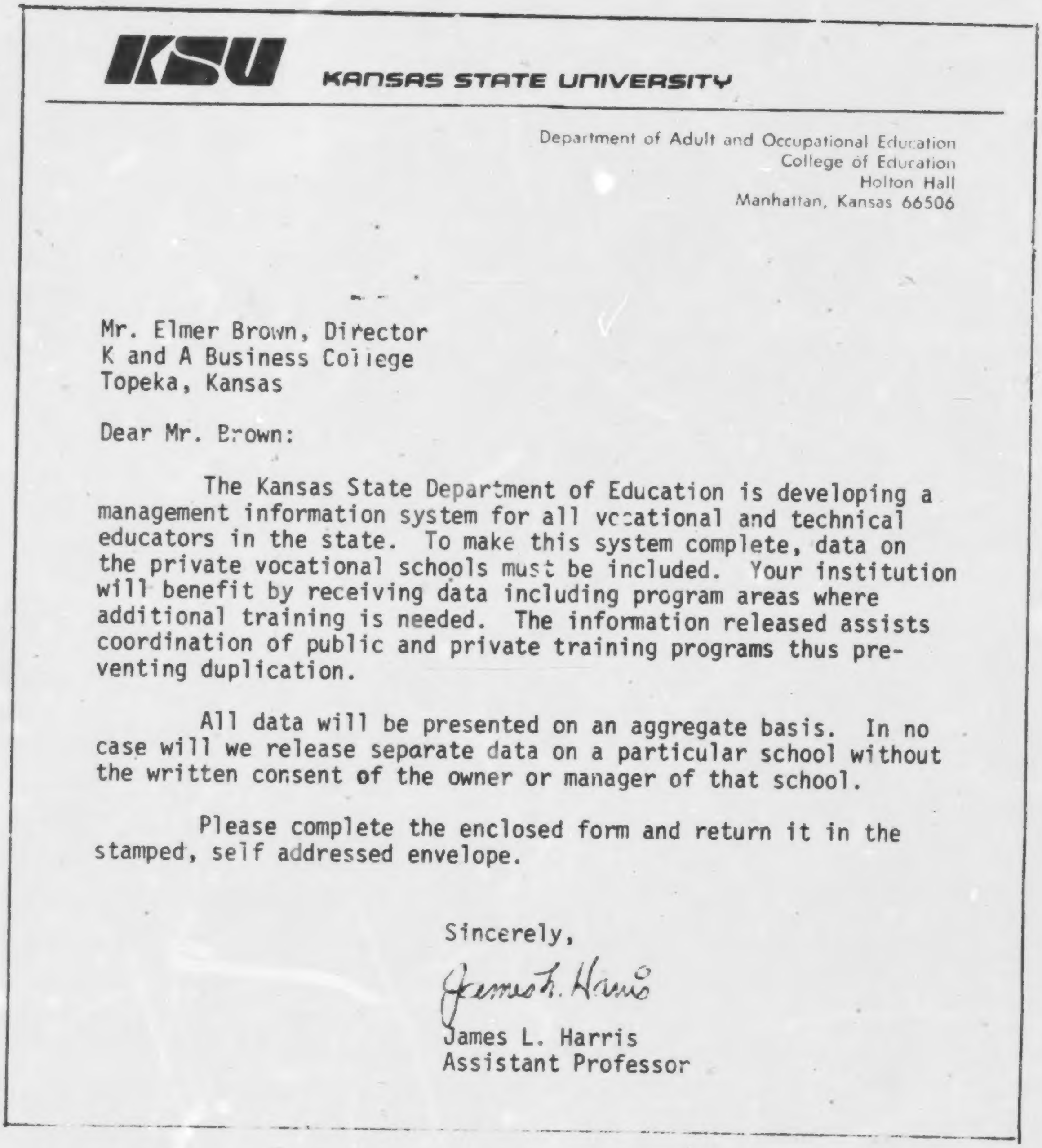
Submodule 2 - Supply from Private Schools

Private schools produce significant numbers of workers for Kansas, particularly in the clerical, technical and health fields. The private schools are surveyed to determine the number of graduates produced annually by job skills. Figure 61 presents a sample of the cover letter and form used to survey private schools.

Clerical graduates are factored by half to estimate the number of workers available to the labor force. Sixty-eight percent of the technical and health graduates are considered to be available. Both the fifty percent figure and the sixty-eight percent figure are based on research done by the OTIS project in Oklahoma. The factored average production for the past several years is used to estimate manpower supply from this source.

Submodule 3 - Supply from MDTA Programs, Apprenticeship Training and Bureau of Correction Programs

Manpower Development Training Act administrators, Bureau of Apprenticeship officials and Bureau of Corrections officials all estimate their graduate production for future years. MDTA graduate estimates should be factored by .78, Bureau of Corrections estimates should be factored by .50, and Bureau of Apprenticeship and Training estimates need not be factored to project number of workers available for the labor force.



KSU KANSAS STATE UNIVERSITY

Department of Adult and Occupational Education
College of Education
Holton Hall
Manhattan, Kansas 66506

Mr. Elmer Brown, Director
K and A Business College
Topeka, Kansas

Dear Mr. Brown:

The Kansas State Department of Education is developing a management information system for all vocational and technical educators in the state. To make this system complete, data on the private vocational schools must be included. Your institution will benefit by receiving data including program areas where additional training is needed. The information released assists coordination of public and private training programs thus preventing duplication.

All data will be presented on an aggregate basis. In no case will we release separate data on a particular school without the written consent of the owner or manager of that school.

Please complete the enclosed form and return it in the stamped, self addressed envelope.

Sincerely,

James L. Harris

James L. Harris
Assistant Professor

Figure 61. Private School Cover Letter and Survey Form

SCHOOL K+A Bus. College ADDRESS Topeka, Kansas

NAME Elmer Brown TITLE Director

	TYPE OF TRAINING PROGRAM (Secretary, etc.)	AVERAGE ANNUAL NUMBER OF KANSAS GRADUATES
1.	Secretarial	75
2.	Key Punch	50
3.	Accounting	60
4.	Court Reporting	15
5.	Comptometer Operator	15
6.	Clerk-Typist	30
7.	Stenographer	50
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

Figure 61. Private School Cover Letter and Survey Form

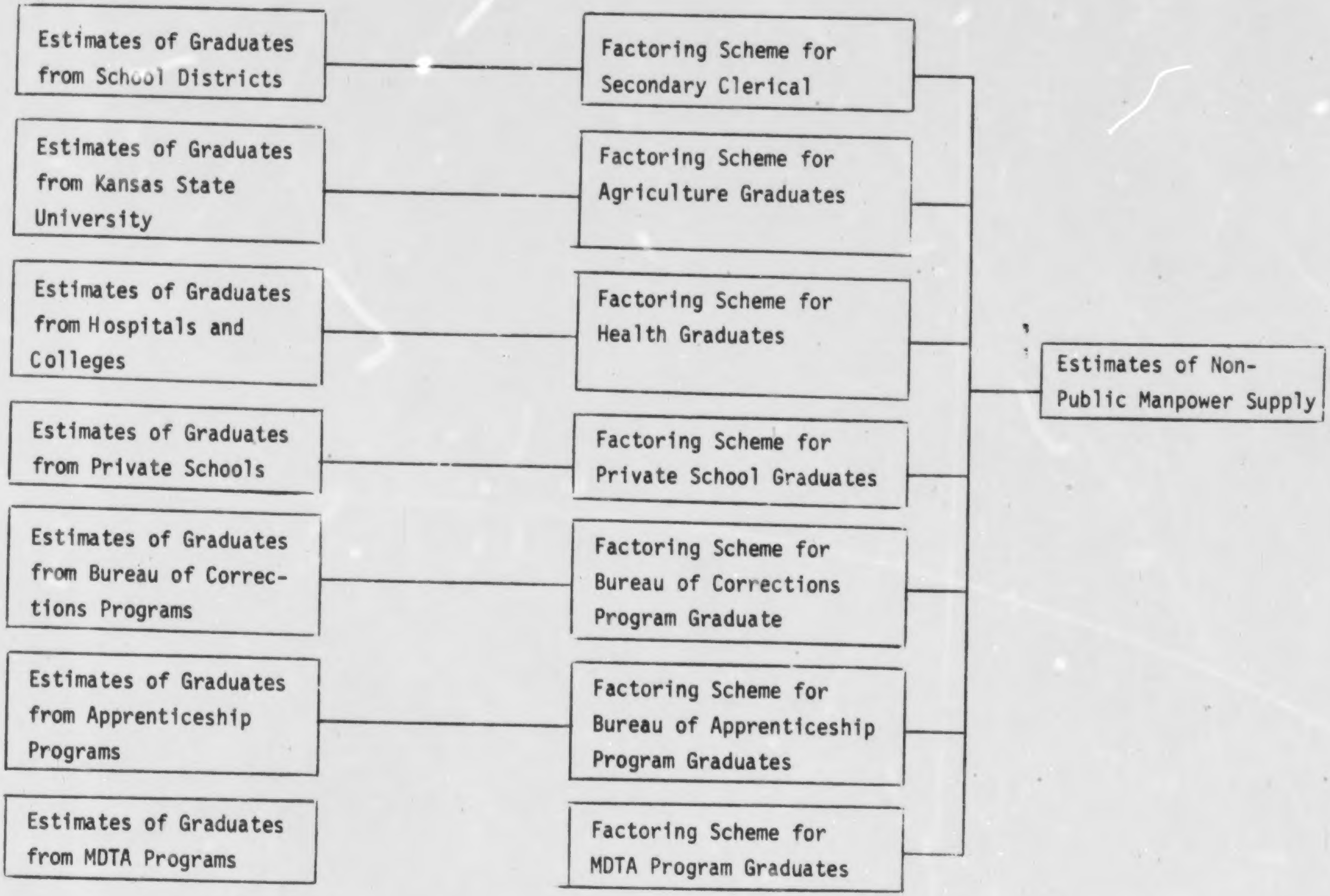

Estimates of Graduates from School Districts
Estimates of Graduates from Kansas State University
Estimates of Graduates from Hospitals and Colleges
Estimates of Graduates from Private Schools
Estimates of Graduates from Bureau of Corrections Programs
Estimates of Graduates from Apprenticeship Programs
Estimates of Graduates from MDTA Programs
Factoring Scheme for Secondary Clerical
Factoring Scheme for Agriculture Graduates
Factoring Scheme for Health Graduates
Factoring Scheme for Private School Graduates
Factoring Scheme for Bureau of Corrections Program Graduate
Factoring Scheme for Bureau of Apprenticeship Program Graduates
Factoring Scheme for MDTA Program Graduates
Estimates of Non-Public Manpower Supply

Figure 62. Non-Public Supply Module Flow Chart

Chapter 4

DEMAND MODULE

BACKGROUND

One of the major tasks outlined in the original K-MUST Proposal was the development of a system to project manpower needs. Initially, it was proposed that a survey of employers be used for manpower demand forecasts, however, sufficient funds were not available to implement this approach. Mr. John Snyder, Kansas State Director of Vocational Education, requested that the K-MUST staff identify an alternative technique which would produce data within the accuracy parameters determined by State Supervisors and yet be financially feasible for Kansas.

After an examination of possible alternatives, it was determined that the Bureau of Labor Statistics Matrix Method A came closest to meeting the set requirements. Method A fell short of meeting requirements since (1) it could not be used to forecast for Sub-State regions other than major SMSA's, (2) it projected only 162 occupations of which many were not of the type served by vocational and technical education, and (3) accuracy of the technique decreased as time since the last U.S. Census increased.

Using Dun and Bradstreet data plus other inputs, the K-MUST staff modified the matrix approach so that (1) the base year was the current year instead of the Census year and (2) base data could be broken into sub-state regions at the discretion of the user. In addition, the matrix was modified so that ratios, percentages, etc., more nearly reflected Kansas employment history. Finally, the approach was supplemented with other studies to expand the number of occupations reported (see Chapter 12).

The purpose of this chapter is to present the module which is used to project manpower needs.

GENERAL MODULE DESCRIPTION

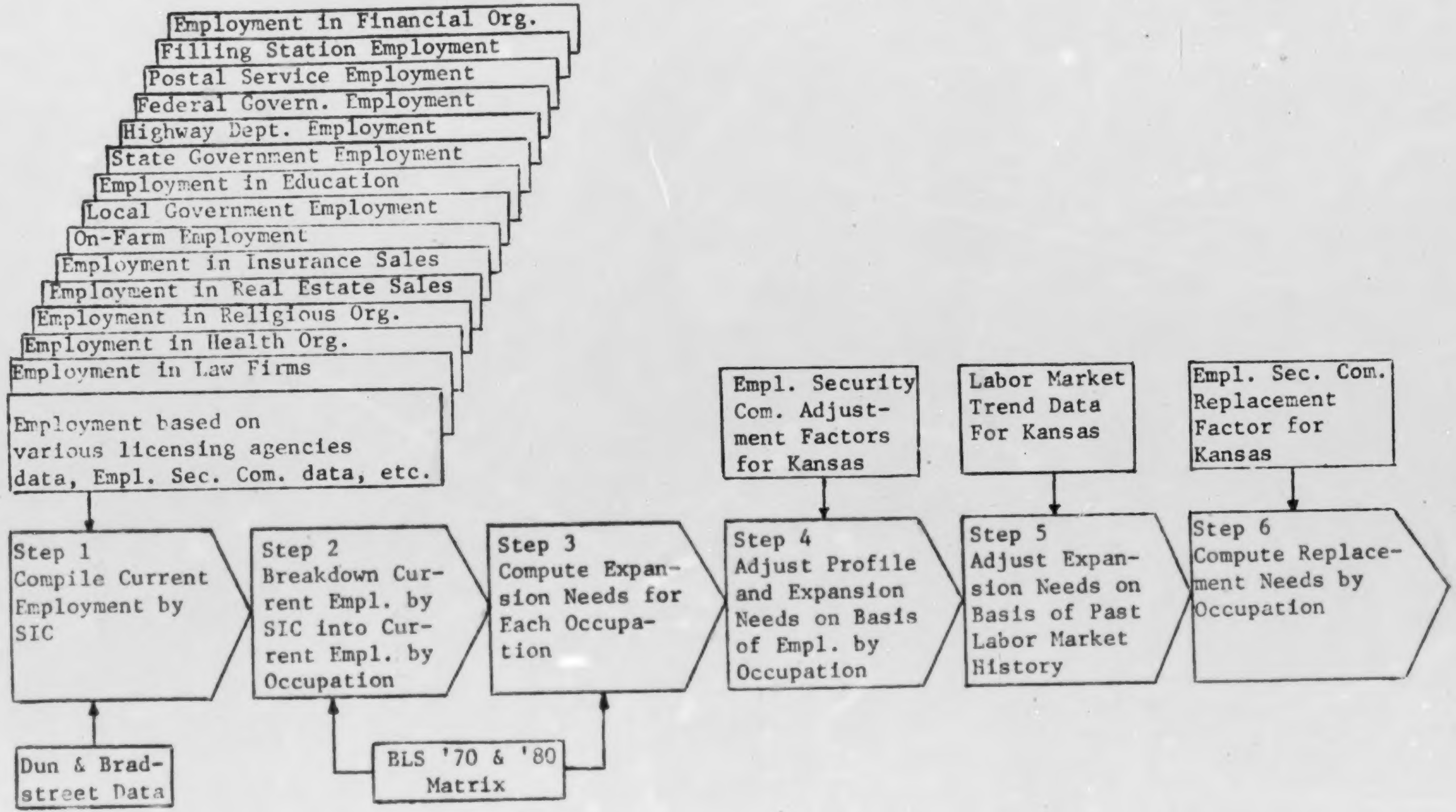
A simplified explanation of what takes place within the modified Bureau of Labor Statistics (BLS) approach developed by the K-MUST staff is best represented by utilizing a flow chart (see Figure 63).

In step 1 of the modified matrix technique, all employing organizations in the labor market are identified by Standard Industrial Classifications (SIC) code and number of employees. The data on individual organizations is based on Dun and Bradstreet Market Identifiers (R), Unemployment Insurance Account records, government directories, Department of Agriculture studies, and other state based studies. This data is accumulated into number of employees in a particular type of industry (SIC).

In step 2, the occupational profile (number of workers by occupation) is derived by breaking employment by SIC into employment by occupation utilizing percentages generated from the BLS 60-70-80 matrix. As an example, suppose that bookkeepers constituted five percent of the workers in the wholesale clothing industry in 1970 and are estimated to constitute eight percent in 1980. Then, in 1973, approximately six percent of the workers in the wholesale clothing industry would be expected to be bookkeepers. If 1973 is the base year, then six percent would be multiplied times the number of workers in the wholesale clothing industry (from step 1) to estimate the number of bookkeepers in the industry. Finally, bookkeepers from all industries are summed to estimate total number of bookkeepers in all industries.

In step 3, which occurs simultaneously with step 2, expansion needs for each occupation in each industry are computed using percentages generated from the matrix. The expansion needs for each occupation are then summed. Continuing the example in step 2, the estimated number of bookkeepers in the wholesale clothing industry would be multiplied times the expansion rate for bookkeepers in that industry. (Note: An annual expansion rate is used and expanded in consideration of the number of years in the projection period selected). Again, the expansion of bookkeepers for all industries is summed to estimate the total expansion of bookkeepers.

Figure 63: Flow Chart of the Modified Matrix Approach


Employment in Financial Org.
Filling Station Employment
Postal Service Employment
Federal Govern. Employment
Highway Dept. Employment
State Government Employment
Employment in Education
Local Government Employment
On-Farm Employment
Employment in Insurance Sales
Employment in Real Estate Sales
Employment in Religious Org.
Employment in Health Org.
Employment in Law Firms
Employment based on various licensing agencies data, Empl. Sec. Com. data, etc.
Step 1 Compile Current Employment by SIC
Dun & Bradstreet Data
Step 2 Breakdown Current Empl. by SIC into Current Empl. by Occupation
BLS '70 & '80 Matrix
Step 3 Compute Expansion Needs for Each Occupation
Empl. Security Com. Adjustment Factors for Kansas
Step 4 Adjust Profile and Expansion Needs on Basis of Empl. by Occupation
Labor Market Trend Data For Kansas
Step 5 Adjust Expansion Needs on Basis of Past Labor Market History
Empl. Sec. Com. Replacement Factor for Kansas
Step 6 Compute Replacement Needs by Occupation

In step 4, both profile and expansion figures are adjusted on the basis of state level data provided by the Kansas Employment Security Commission. This is, in effect, adjusting profiles and expansion to the Kansas situation. In the example, suppose that the state profile of bookkeepers estimated by the technique was 3000 while the Kansas Employment Security Commission figure was 2500. In this case, all regional bookkeeper profile figures would be decreased by one sixth. On the other hand, suppose that the bookkeeper expansion rate was greater in Kansas than in the nation as a whole (as reflected in the matrix), then the expansion rate in the regions would be increased after an adjustment for the profile decrease.

In step 5, the profiles and expansion needs are further adjusted to the local situation using regional labor market trend data provided by the Employment Security Commission. Suppose that the work force figure projected for the region is greater or less than that reported by the Employment Security Commission. Then each occupation in the profile is adjusted relative to the total work force for the region. Further, suppose that for a given region, the work force as a whole has historically expanded at a rate of two percent annually while the adjusted matrix projections show that the work force is expanding at a rate of three percent annually. The expansion figure for bookkeepers would then be decreased by one third for that region. (Note: Regional adjustments, of course, do not change the state figures as the regions combined equal the state).

In step 6, replacement needs are calculated using percentage factors provided by the Employment Security Commission which are based on the occupational mobility of workers, the age of workers, and mortality figures. Suppose that the replacement factor for bookkeepers was two percent per year and the projection period is five years. Then the average number of bookkeepers (base year plus base year plus expansion divided by two) over the period is multiplied times two percent times five (years) to estimate replacement needs.

DATA COLLECTION

There are six basic types of data that must be collected for input into this system. Data collection procedures which are used to prepare the basic input are discussed in this section. In addition, there are parameter inputs and code interpretation inputs which are discussed in the data preparation section.

Supplemental Employment by SIC Data

While the Dun and Bradstreet Market Identifiers (R) are the major source of employment by SIC data, there are several areas which are not covered by this source, i.e., government organizations, non-profit organizations, financial institutions, organizations which do not seek credit from conventional sources, professional persons such as doctors, lawyers, etc., and farmers. As previously mentioned, the data needed in these areas is employment by SIC by region. Data sources other than Dun and Bradstreet include the following.

1. Employment in financial organizations is reported by the Employment Security Commission on a county basis annually.

2. Filling station employment is estimated by first counting the number of filling stations in the regions using telephone directories and then multiplying the numbers by five (an estimate of the average employment per filling station in Kansas).

3. Postal Service employment is reported by the U.S. Department of Commerce.

4. Federal Government employment other than postal employment is also reported by the U.S. Department of Commerce.

5. Highway Department employment is reported by county by the U.S. Department of Commerce.

6. State Government employment is also reported by the U.S. Department of Commerce.

7. Employment in Education is obtained from the Statistical Division of the Kansas State Department of Education.

8. Local Government employment is reported by county by the League of Kansas Municipalities.

9. On Farm employment is reported by the Employment Security Commission.

10. Employment in Insurance sales is obtained from the State Department of Insurance.

11. Employment in Real Estate sales is reported in the Directory of Licensed Real Estate Brokers.

12. Employment in religious organizations is obtained from (a) the Kansas Council of Churches and (b) the Kansas Catholic Conference.

13. Employment in Health Organizations is obtained from Ken Brown of Wichita State University who surveys health organizations periodically.

14. Employment in legal firms is obtained from the Kansas Legal Directory.

A list of all SIC codes and corresponding titles may be found in Table 4.

Replacement Factors

The Kansas Employment Security Commission provides replacement factors for all occupations in the matrix.

State Profile Adjustment Factors

State profile adjustment factors are obtained by using the modified matrix approach to develop a state profile without adjustments and then using Employment Security Commission occupational profiles to develop a figure which, when multiplied times an unadjusted profile, will result in the Employment Security Commission figure. There is a factor for each occupation.

State Expansion Adjustment Factors

State expansion adjustment factors are obtained by using the modified matrix approach to develop a state expansion table without adjustments and then using Employment Security Commission figures to determine a percent of error. This figure is signed (either plus or minus). These figures are reported by occupation.

Regional Profile Adjustment Factors

Regional profile adjustment factors are calculated on the basis of the unadjusted regional profile size for the total of all occupations divided by the Employment Security Commission total for the region. There is a factor for each region.

Regional Expansion Adjustment Factors

Regional expansion adjustment factors are calculated on the basis of

Table 4

INDUSTRY CODES AND CORRESPONDING TITLES USED IN THE MODIFIED MATRIX APPROACH

Industry Code	Industry Title
010	Agriculture
080	Forestry
090	Fisheries
100	Metal Mining
110	Coal Mining
130	Crude Petroleum and Nat Gas
140	Nonmetallic Mining, Quarrying
150	Construction
180	Durable Goods Manufacturing (Other)
241	Logging Camps and Contractors
242	Saw Mills, Millwk, Misc Wood
250	Furniture and Fixtures
321	Glass and Glass Products
324	Cement, Concrete and Plaster
325	Structural Clay Products
326	Pottery and Related Products
328	Misc Nonmetallic and Stone
333	Primary Nonferrous Products
340	Fabricated Metal Products
350	Machinery Exc Electric
360	Electrical Machinery
371	Motor Vehicles and Equipment
372	Aircraft and Engines
373	Ship, Boat Building and Repair
374	Railroad, Other Transportation Equipment
380	Instruments, Exc Clocks
387	Watches and Clock Devices
390	Misc Manufacturing
206	Food and Kindred Products, Other
201	Meat Products

Table 4 (Cont.)

Industry Code	Industry Title
202	Dairy Products
203	Canning, Preserving, Freezing
294	Grain Mill Products
205	Bakery Products
208	Beverage Industries
209	Other Food Products
210	Tobacco Manufactures
220	Textile Mill Products
230	Apparel, Misc Fab Textile
261	Pulp, Paper and Board Mills
265	Paperboard Containers, Boxes
266	All Other Paper Products
270	Printing and Publishing
280	Chemicals, Allied Prod
282	Synthetic Fibers
283	Drugs and Medicine
285	Paints and Varnishes
287	Misc Chemical Products
290	Petrol Refin, Coal Prod
291	Petroleum Refining
298	Other Retrol and Coal Products
301	Rubber Products
307	Misc Plastic Products
311	Leather Tanning and Finishing
314	Footwear, Except Rubber
315	All Other Leather Products
400	Railroads
411	Local Transit, Interurban Bus
412	Taxis
421	Trucking
422	Warehousing
440	Water Transportation
452	Air Transportation
460	Pipelines
470	Transportation Services
481	Telephone
482	Telegraph
483	Radio and TV
491	Electric, Gas and Steam
494	Water and Irrigation
501	Motor Vehicles and Equipment
502	Drugs and Chemicals
503	Dry Goods and Apparel
504	Groceries and Related Products
506	Elect Goods, Hardware, Plumbing
508	Machinery and Equipment
509	Miscellaneous Wholesale Trade

Table 4 (Cont.)

Industry Code	Industry Title
555	Retail Trade,
520	Bldg Materials, Farm Equipment
533	Limited Price Stores
538	Other General Merchandising
540	Food and Dairy Stores
551	Auto and Accessory Dealers
554	Gas Stations
560	Apparel and Accessories
570	Furniture, Furnishings, and Appl
580	Eating and Drinking Places
591	Drug Stores
592	Other Retail Stores
601	Banks and Credit Agencies
630	Insurance Companies
650	Real Estate
700	Hotels, Other Lodging Places
721	Laundries, Cleaners, Valet Shops
722	Other Personal Services
731	Advertising Agencies
732	Other Misc Business Services
750	Auto Repair Services
760	Other Repair Services
780	Motion Pictures and Theaters
790	Misc Entertainment, Recreation
800	Medical, Other Health Ser
806	Hospitals
807	Other Medical and Health Ser
810	Legal Services
820	Educational Services
866	Welfare and Religious Organ
868	Nonprofit Membership Organiz
880	Private Households
891	Engineering and Architec Ser
898	Accounting, Bookkeeping Ser
899	All Other Professional Ser
900	Federal Public Admin
920	State Public Administration
930	Local Public Administration

the labor force size for 1960 and 1970 as reported in the census. The factor is reported as a percent of increase or decrease (plus or minus). These figures are reported by region.

DATA PREPARATION

There is one card file prepared for KMUST05 and five card files prepared for KMUST10. (Note: KMUST05 and KMUST10 are software used in this module). The KMUST05 file is called CARD-FILE while the KMUST10 files are called DOT-NAME-FILE, REPL-FACTOR-FILE, COUNTY-NAME-FILE, CO-ADJ-FILE and YEAR-CONTROL-FILE. Descriptions of card records in these files are as follows.

CARD-FILE

This file contains (1) region number, (2) SIC code, and (3) regional employment in the SIC for those SIC's not covered by the Dun and Bradstreet data. Figure 64 graphically describes a card record in this file.

DOT-NAME-FILE

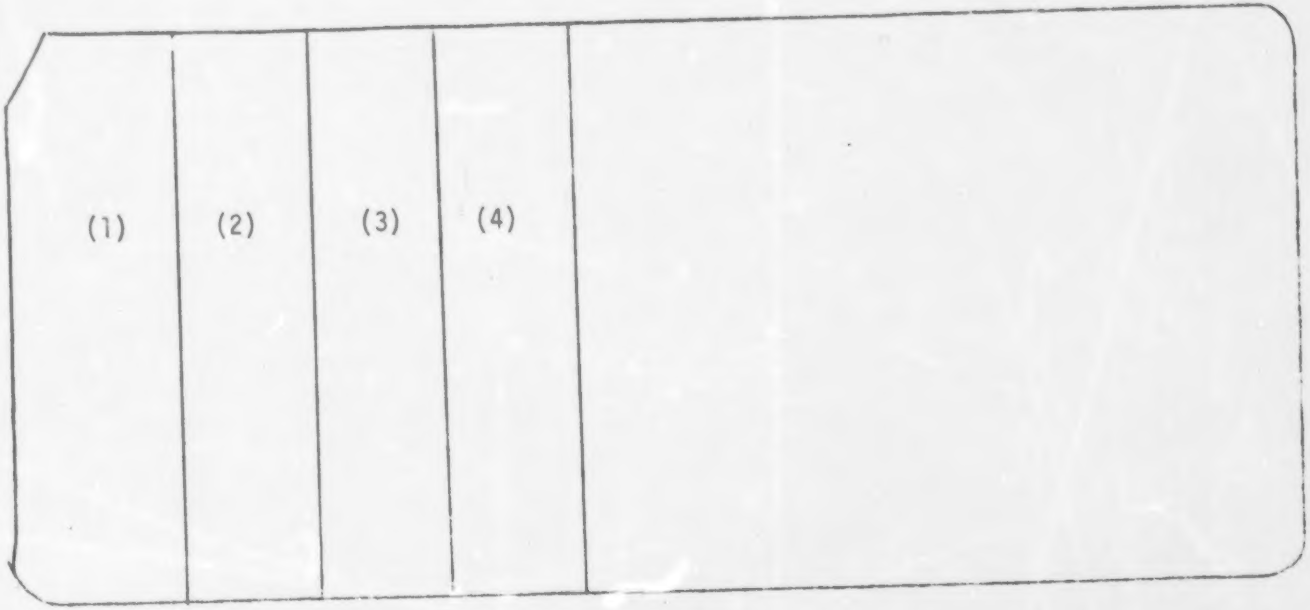
This file contains (1) the occupational codes used in the projections and (2) a verbal definition of the code. Figure 65 is a graphic description of a card record in this file. Table 5 contains a list of all occupational codes used and their verbal descriptions.

REPL-FACTOR-FILE

This file contains (1) the occupational codes used in the projections, (2) replacement factors for each occupational code, (3) state profile adjustment factors for each occupation, and (4) state expansion adjustment factors for each occupation. (Note: The latter is signed with a plus or minus). Figure 66 is a graphic representation of a card record in this file.

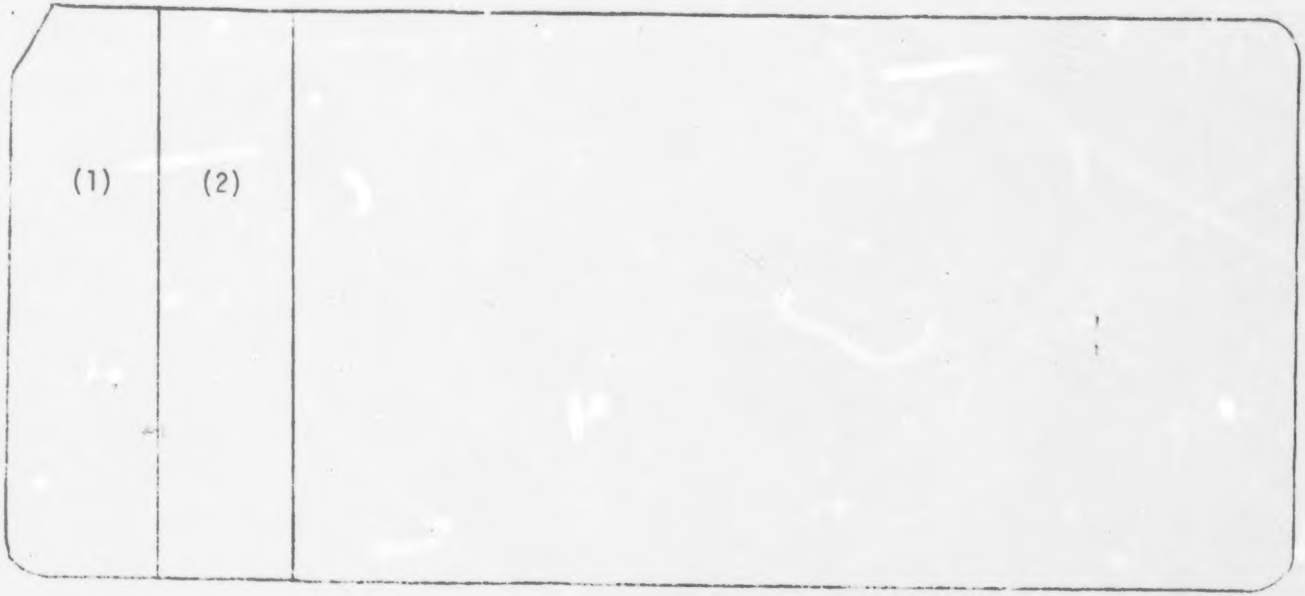
COUNTY-NAME-FILE

This file contains (1) regional codes, (2) the region name associated with the codes, and (3) regional profile adjustment factors. Figure 67 is a graphic representation of a card record in this file.



1. CC-1-2 Blank
2. CC 3-5 County Code
3. CC 6-8 SIC Code
4. CC 9-16 Employment in SIC in County

Figure 64: Card Record in CARD-FILE.



1. CC 1-4 Occupational Code
2. CC 5-34 Corresponding Occupational Name

Figure 65: Card Record for DOT-NAME-FILE.

Table 5

OCCUPATIONAL CODES AND CORRESPONDING TITLES USED IN THE MODIFIED MATRIX APPROACH

Occupational Code	Occupational Title
0000	Employment Total
1000	Professional, Technical, Kindred
1100	Engineers, Technical
1110	Engineers, Aeronautical
1120	Engineers, Chemical
1130	Engineers, Civil
1140	Engineers, Electrical
1150	Engineers, Industrial
1160	Engineers, Mechanical
1170	Engineers, Metallurgical
1180	Engineers, Mining
1199	Other Engineers, Technical
1200	Medical and Other Health Wkrs
1210	Dentists
1220	Dietitians and Nutritionists
1230	Nurses, Professional
1240	Optometrists
1250	Osteopaths
1260	Pharmacists
1265	Physicians and Surgeons
1270	Psychologists
1280	Technicians, Medical and Dental
1290	Veterinarians
1299	Other Medical and Health Wkrs
1300	Teachers
1400	Natural Scientists
1410	Chemists
1420	Agricultural Scientists
1430	Biological Scientists
1440	Geologists and Geophysicists
1450	Mathematicians
1460	Physicists
1499	Other Natural Scientists
1500	Social Scientists
1510	Economists
1520	Statisticians and Actuaries

Table 5 (Cont.)

Occupational Code	Occupational Title
1599	Other Social Scientists
1600	Tech, Except Medical and Dental
1610	Draftsmen
1620	Surveyors
1630	Air Traffic Controllers
1640	Radio Operators
1699	Technicians, Other
1900	Other Professional, Tech, Kindrd
1910	Accountants and Auditors
1915	Airplane Pilots and Navigators
1920	Architects
1930	Clergymen
1935	Designers, Exc Design Draftsmen
1940	Editors and Reporters
1945	Lawyers and Judges
1950	Librarians
1960	Personnel and Lbr Relatns Wkrs
1970	Photographers
1980	Social and Welfare Workers
1990	Teachrs, Wkrs in Arts, Entrmnt
1999	Prof, Technical, Kindred Nec
2000	Managers, Officials, Proprietors
2100	Conductors, Railroad
2200	Officers, Pilots, Engineers Ship
2300	Creditmen
2400	Purchasing Agents
2500	Postmasters and Assistants
2900	Mgrs, Officials, Proprietors Nec.
3000	Clerical and Kindred Workers
3100	Stenogrphrs, Typsts, Secretaries
3200	Office Machine Operators
3900	Other Clerical and Kindrd Wkrs
3910	Accounting Clerks
3920	Bookkeepers, Hand
3930	Bank Tellers
3940	Cashiers
3950	Mail Carriers
3970	Postal Clerks
3980	Shipping and Receiving Clerks
3990	Telephone Operators
3999	Clerical and Kindred Nec
4000	Sales Workers
4900	Other Sales Workers Nec
5000	Craftsmen, Foremen, and Kindred
5100	Construction Craftsmen
5110	Carpenters
5120	Brickmasons, Stone, Tile Setters

Table 5 (Cont.)

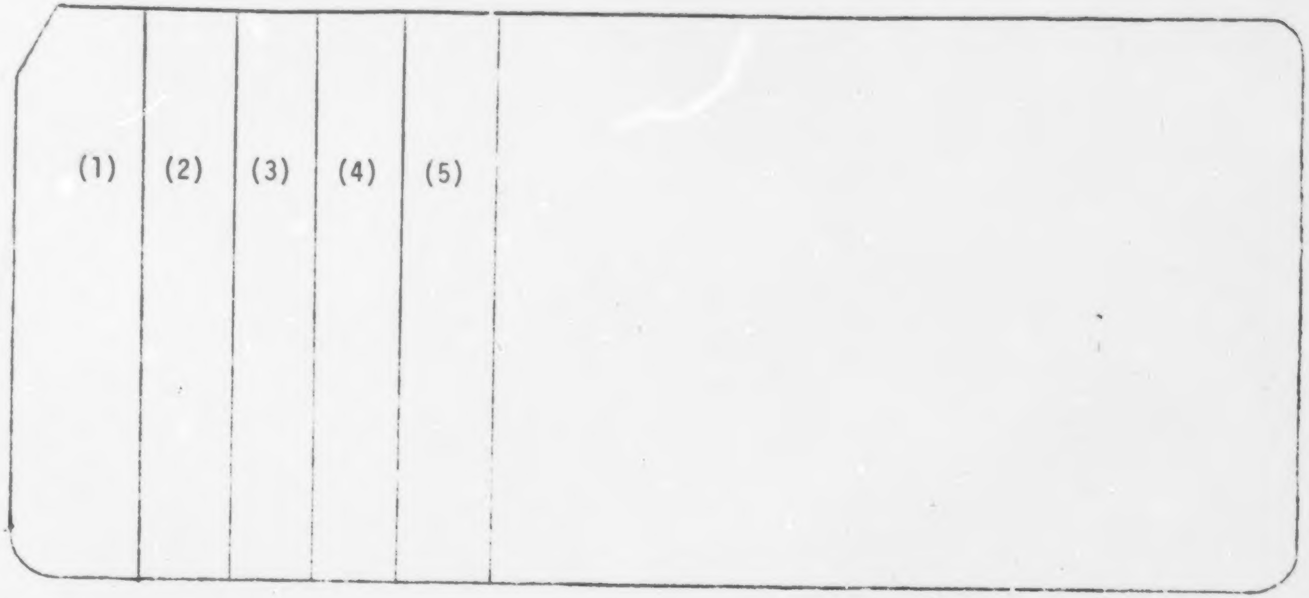
Occupational Code	Occupational Title
5130	Cement and Concrete Finishers
5140	Electricians
5145	Excavating, Grading, Rd Mach Opr
5150	Painters and Paperhangers
5160	Plasterers
5170	Plumbers and Pipefitters
5180	Roofers and Slaters
5190	Structural Metalworkers
5200	Foremen, Nec
5300	Metalworking Craftsmn Exc Mech
5310	Machinists and Related Occup
5320	Blacksmiths, Forgemen, Hammermen
5325	Boilermakers
5330	Heat Treatrs, Annealrs, Temprers
5340	Millwrights
5350	Molders, Metal (Exc Coremakers)
5360	Patternmakers, Metal and Wood
5370	Rollers and Roll Hands
5380	Sheet Metal Workers
5390	Toolmakers, Diemakers, Setters
5400	Mechanics and Repairmen
5420	Airplane Mech and Repairmen
5430	Motor Vehicle Mechanics
5440	Office Machine Mechanics
5450	Radio and TV Mechanics
5460	Railroad and Car Shop Mech
5499	Other Mechanics and Repairmen
5600	Printing Trades Craftsmen
5610	Compositors and Typesetters
5620	Electrotypers and Stereotyprs
5630	Engravers Exc Photoengravers
5640	Photoengravers and Lithographrs
5650	Pressmen and Plate Printers
5700	Transp and Pub Util Craftsmen
5710	Line and Servmn, Tel and Power
5720	Locomotive Engineers
5730	Locomotive Firemen
5900	Other Craftsmn and Kindrd Wkrs
5910	Bakers
5915	Cabinetmakers
5920	Cranemen, Derrickmen, Hoistmen
5925	Glaziers
5930	Jewelers and Watchmakers
5935	Loom Fixers
5950	Opticians, Lens Grindrs, Polshrs
5970	Inspectors, Log and Lumber
5980	Inspectors, Other
5990	Upholsterers

Table 5 (Cont.)

Occupational Code	Occupational Title
5999	Craftsmen and Kindred Wkrs Nec
6000	Operatives and Kindred Workers
6200	Drivers and Deliverymen
6210	Drivers, Bus, Truck, Tractor
6220	Deliverymn, Routemn, Cab Drivers
6300	Semiskilled Metalworking Occup
6310	Assemblers, Metalwrkng Class A
6320	Assemblers, Metalwrkng Class B
6330	Inspectors, Metalwrkng Class B
6340	Machine Tool Operatrs Class B
6350	Electroplaters
6360	Electroplater Helpers
6370	Furnacemen, Smeltermen, Pourers
6380	Heaters, Metal
6390	Welders and Flame Cutters
6700	Transp and Pub Util Operatives
6710	Brakemen, Switchmen Railroad
6720	Power Station Operators
6730	Sailors and Deckhands
6800	Semiskilled Textile Occup
6810	Knitters, Loopers, and Toppers
6820	Spinners, Textile
6830	Weavers, Textile
6840	Sewers and Stitchers Mfg
6900	Other Operatives and Kindred
6910	Asbestos, Insulation Workers
6920	Auto Attendants, Gas and Parkng
6930	Blasters and Powdermen
6940	Laundry and Dry Cleaning Oprs
6950	Mine Operatives, Laborers Nec
6960	Meat Cutters, Exc Meat Packing
6999	Operatives and Kindred Nec
7000	Service Workers
7100	Private Household Workers
7200	Protective Service Workers
7210	Firemen
7220	Policemen, Detectives, Etc
7230	Guards, Watchmen, Doorkeepers
7300	Food Service Workers
7310	Bartenders
7320	Cooks, Exc Private Households
7330	Counter and Fountain Workers
7340	Waiters and Waitresses
7900	Other Service Workers
7910	Airline Stewards, Stewardesses
7920	Attendnts, Hosp and Other Inst
7930	Charwomen and Cleaners

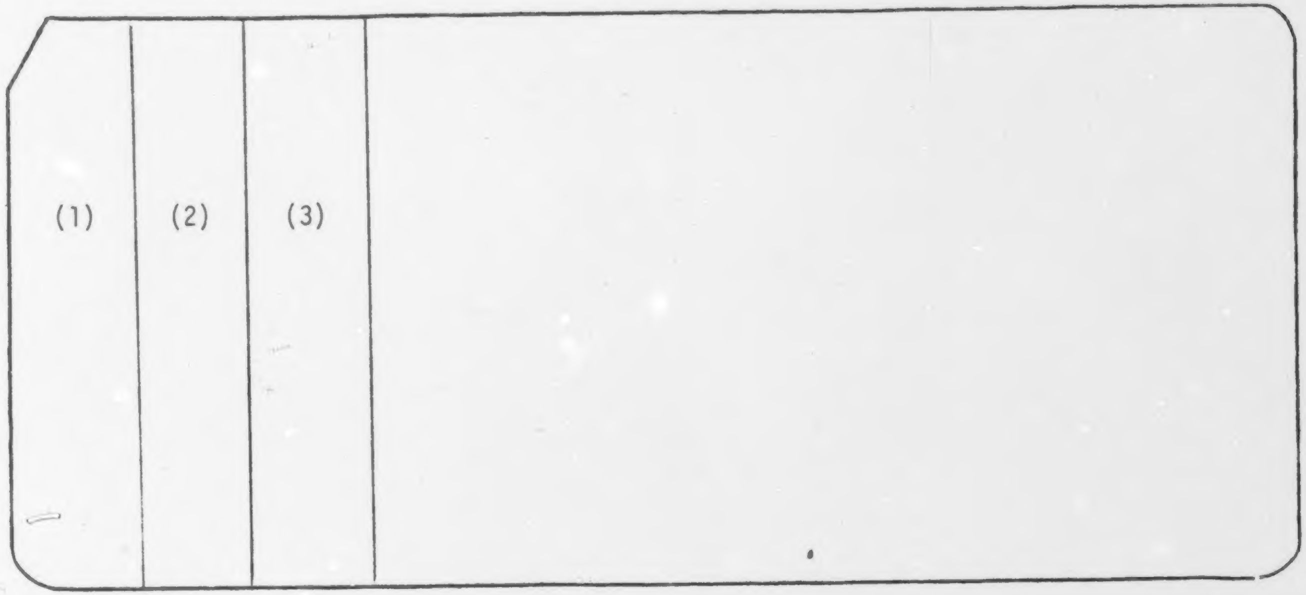
Table 5 (Cont.)

Occupational Code	Occupational Title
7940	Janitors and Sextons
7950	Nurses, Practical
7999	Other Service Workers Nec
8000	Laborers, Except Farm and Mine
9000	Farmers and Farm Workers



1. CC 1-4 Occupational Code
2. CC 5-9 Replacement Factor (Assumed Decimal Between Second and Third Digit)
3. CC 10-13 State Profile Adjustment Factor (Assumed Decimal Between Second and Third Digit)
4. CC 14- Sign for State Expansion Adjustment Factor
5. CC 15-19 State Expansion Adjustment Factor (Assumed Decimal Before First Digit)

Figure 66. Card Record in REPL-FACTOR-FILE.



1. CC 1-3 Regional Code
2. CC 4-23 Corresponding Regional Name
3. CC 24-27 Regional Profile Adjustment Factor

Figure 67. Card Record for COUNTY-NAME-FILE.

CO-ADJ-FILE

This file contains (1) regional codes and (2) regional expansion adjustment factors associated with the regions. Figure 68 presents the card layout for a record in this file.

YEAR-CONTROL-FILE

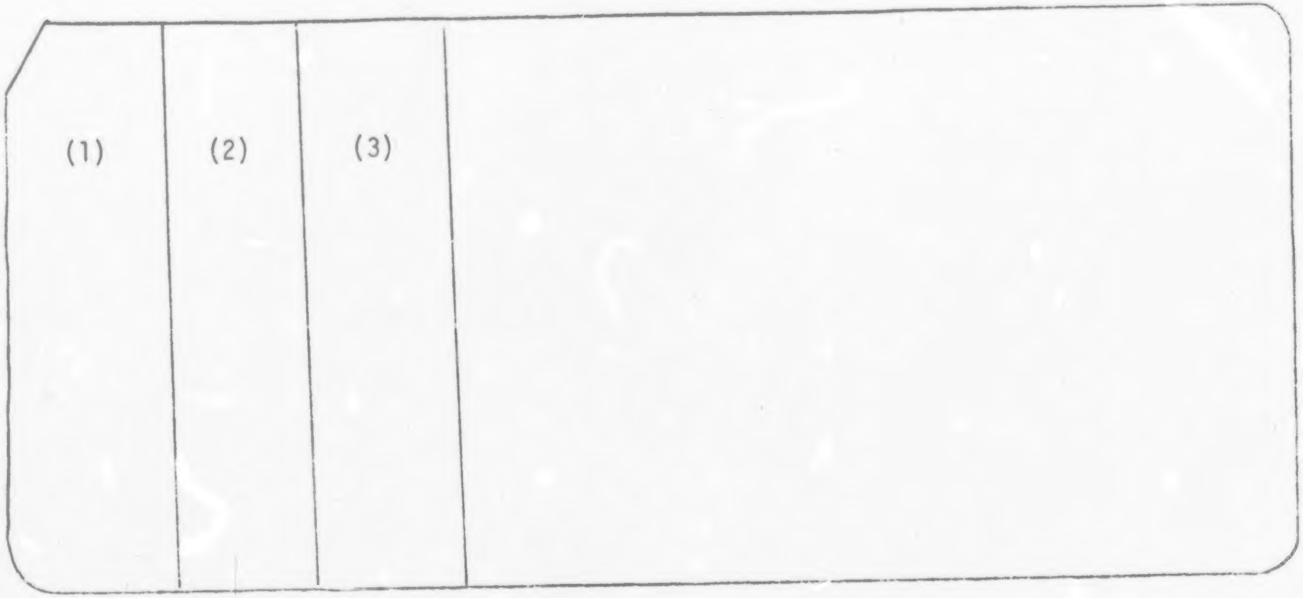
This file contains a single card with (1) the last two digits of the first year in the projection period, e.g., '73'and (2) the last year in the projection period, e.g., '77'. Any two years can be used as parameters for the projection period as long as the first year is between 1970 and 1980 and the last year is no more than ten years past the first year. The projections will cover the parameter years inclusively. Figure 69 presents the card layout for this file.

CATALOG OF MODULE PROGRAMS

KMUST01 copies the Dun and Bradstreet tape file from D70234 (2,SL) to 712304 (,SL) in order to make the DNB file operational for OS 360 computer systems. Both files consist of 36,110 records, each 350 bytes in length. 712304 is labeled DSN=COPYRT.DNB1971,DCB=(RECFM=FB,LRECL=350,BLKSIZE=3500, DEN=2,TRTCH=C). Figure 70 is a source listing of KMUST01.

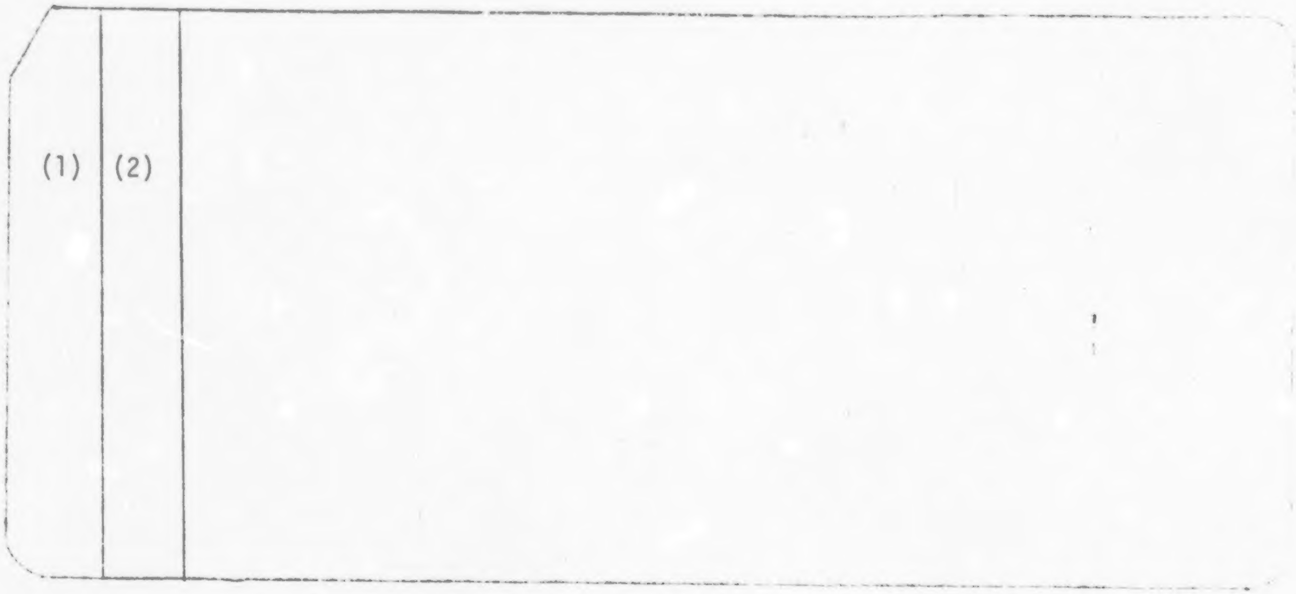
KMUST02 sorts the Dun and Bradstreet file from 712304 (,SL) to 909101 (,SL). The original file is sorted by firm name within Kansas. The created file is sorted by firm within city within county for Kansas. 909101 is labeled DSN=COPYRT.SORT1,DCB (RECFM=FB,LRECL=350,BLKSIZE=3500). Both tape files contain 36,110 records, each record being 350 bytes in length. Figure 71 is a source listing of KMUST02.

KMUST04 copies and edits the BLS matrix file from 710703 (operational for 1401/1460 computer systems only) to 717800 (,SL). Input records are 77 bytes in length and output records are 30 bytes. Output records contain SIC, DOT, matrix year, total employment in the DOT for the SIC, and ratio of employment for the DOT in the SIC. The output file is sorted by matrix year within DOT within SIC. The file contains 88,264 records and matrix years 1960, 1970, and 1980 are included. The output file is labeled DSN=BLS1,DCB= (RECFM=FB,LRECL=30,BLKSIZE=7200,DEN2, TRTCH T). Figure 72 is a source listing of KMUST04.



1. CC 1-3 Regional Code
2. CC 4 Sign of Regional Expansion Adjustment Factor
3. CC 5-8 Regional Expansion Adjustment Factor (Assumed Decimal in Front of First Digit)

Figure 68. Card Record in CO-ADJ-FILE.



1. CC 1-2 Last Two Digits in Start Year
2. CC 3-4 Last Two Digits in Finish Year

Figure 69. Card Record in YEAR-CONTROL-FILE.

```
//STEP1 EXEC RINGWTR,PARM=(712304)
//STEP2 EXEC PGM=IEBGENER
//SYSIN DD DUMMY
//SYSPRINT DD SYSOUT=A
//SYSUT2 DD DSN=COPYRT.DNB1971,UNIT=TAPE7,LABEL=(,SL),DISP=(,PASS),
// VOL=SER=712304,DCB=(RECFM=FB,LRECL=350,BLKSIZE=3500,DEN=2,TRTCH=C)
//SYSUT1 DD DSN=DB01,UNIT=TAPE9,LABEL=(2,BLP),DISP=(OLD,PASS),
// VOL=SER=070234,DCB=(RECFM=FB,LRECL=350,BLKSIZE=3500,DEN=2)
//
```

Figure 70: Source Listing for KMUST01

```
//STEP1 EXEC RINGSTR,PARM=(909101)
//STEP2 EXEC SUPRSORT,SPACE=400
//SORT1.SORTOUT DD DSN=COPYRT.DBSORT1,UNIT=TAPE9,LABEL=(,SL),
// DISP=(,KEEP),VOL=SER=909101,DCB=(RECFM=FB,LRECL=350,BLKSIZE=3500)
//SORT1.SORTIN DD DSN=COPYRT.DNB1971,UNIT=TAPE7,LABEL=(,SL),
// DISP=(OLD,KEEP),VOL=SER=712304,
// DCB=(RECFM=FB,LRECL=350,BLKSIZE=3500,DEN=2,TRTCH=C)
//SORT1.SYSIN DD *
   SORT FIELDS=(13,3,A,100,13,A,22,30,A),FORMAT=CH
```

Figure 71: Source Listing for KMUST02

```
//RINGWTR  EXEC  RINGWTR,PARM=(917700)
//EDIT EXEC PL1LFCLG,PARM.PL1L='NA,NX,OPT=2,NST,FLAGS'
//PL1L.SYSIN  DD  *
 /*                              E D I T                                     */
 /*                                                                          */
 /*   THIS PROGRAM EDITS 77 CHARACTER RECORDS INTO 30 CHARACTER              */
 /*   RECORDS.  THE HIGH ORDER 4 BITS OF THE 21ST CHARACTER OF THE           */
 /*   INPUT ARE CONVERTED TO ONES (I.E., OR'ED WITH HEXIDECIMAL F).          */
 /*                                                                          */
 /*   THE INPUT AND OUTPUT FILES MAY HAVE ANY BLOCKING FACTOR.               */
 /*                                                                          */
 /*   WRITTEN BY HUGH IRVIN FOR JAMES HARRIS (ADULT AND OCCUPATIONAL         */
 /*   EDUCATION) ON FEBRUARY 28, 1972.                                       */
 /*                                                                          */
 EDIT:    PROC OPTIONS(MAIN);
          DCL (#IN,#OUT,TIMEIN,TIMEOUT)FIXED BIN(31)INIT(0B)STATIC;
          DCL INTAPE RECORD INPUT;
          DCL OUTTAPE RECORD OUTPUT;
          DCL 1 INBUF BASED(PTR),
                2 COL01_TO_11 CHAR(11),
                2 COL12_TO_17 CHAR(06),
                2 COL18_TO_18 CHAR(01),
                2 COL19_TO_22,
                  3 COL19_TO_20 CHAR(2),
                  3 COL21 CHAR(1),
                  3 COL22 CHAR(1),
                2 COL23_TO_32 CHAR(10),
                2 COL33_TO_34 CHAR(02),
                2 COL35_TO_41 CHAR(07),
                2 COL42_TO_50 CHAR(09),
                2 COL51_TO_61 CHAR(11),
                2 COL62_TO_70 CHAR(09),
                2 COL71_TO_77 CHAR(07);
          DCL 1 OUTBUF,
                2 COL01_TO_06 CHAR(06),
                2 COL07_TO_10 CHAR(04),
                2 COL11_TO_12 CHAR(02),
                2 COL13_TO_21 CHAR(09),
                2 COL22_TO_30 CHAR(09);
          DCL 1 OVLY BASED(PTR),
                2 JUNK CHAR(18),
                2 COL19_TO_22 CHAR(4);
          ON ENDFILE(INTAPE)  GO TO FINISH;
          OPEN FILE(INTAPE), FILE(OUTTAPE);
          CALL INTIME(TIMEIN);
```

Figure 72: Source Listing for KMUST04

```
LOOP:
               READ FILE(INTAPE)SET(PTR);
               #IN = #IN+1B;
               UNSPEC(COL21) = UNSPEC(COL21)|'11110000'B;
               COL01_TO_06 = COL12_TO_17;
               COL07_TO_10 = OVLY.COL19_TO_22;
               COL11_TO_12 = COL33_TO_34;
               COL13_TO_21 = COL42_TO_50;
               COL22_TO_30 = COL62_TO_70;
               WRITE FILE(OUTTAPE)FROM(OUTBUF);
               #OUT = #OUT+1B;
               GO TO LOOP;
 FINISH: CALL INTIME(TIMEOUT);
         CLOSE FILE(INTAPE), FILE(OUTTAPE);
         OPEN FILE(SYSPRINT);
         PUT FILE(SYSPRINT)EDIT('NORMAL TERMINATION.',#IN,' RECORDS WERE
  READ.',#OUT,' RECORDS WERE WRITTEN.')(A,(2)(COL(1),F(10),A));
         PUT FILE(SYSPRINT)EDIT(TIMEOUT-TIMEIN,' HUNDREDTHS OF A SECOND
 EXECUTION TIME.')(COL(1),F(10),A);
         CLOSE FILE(SYSPRINT);
         END EDIT;
//GO.INTAPE DD DSN=OCCMAT,UNIT=TAPE7,DISP=OLD,VOL=SER=OP1066,LABEL=(1,
//    BLP),DCB=(RECFM=FB,LRECL=77,BLKSIZE=770,DEN=1,TRTCH=ET)
//GO.OUTTAPE DD DSN=BLS1,UNIT=TAPE9,DISP=(,KEEP),VOL=SER=917700,
//  LABEL=(1,SL),DCB=(RECFM=FB,LRECL=30,BLKSIZE=7200)
```

Figure 72: Source Listing for KMUST04 (Cont)

KMUST05 processes the Dun and Bradstreet file 909101 (,SL) and supplementary card records not given by DNB (e.g., government employment, etc.), giving an output file consisting of employee summary totals by SIC within each county. The output file is labeled DSN=SICTOT,DCB=(RECFM=FB, LRECL=25,BLKSIZE=7200,DEN=2,TRTCH=C),VOL=SER=718800 (,SL). Figure 73 is a flow chart of KMUST05 while Figure 74 is a source listing.

KMUST07 copies and edits the BLS matrix file 717800 (,SL), eliminating all 1960 matrix year records, selected SIC's, and selected DOT's. The output file contains records only for 1970 and 1980 matrix years and is sorted by year within DOT within SIC. The output file contains 46,482 records and is labeled DSN=BLS2,VOL=SER909202 ,LABEL=(,SL),DCB=(RECFM=FB,LRECL=27,BLKSIZE= 6750). Figure 75 is a flow chart of KMUST07 while Figure 76 is a source listing.

KMUST09 changes the county codes in the Dun and Bradstreet file (updated with supplementary data) to regional codes. This program is so simple that no flow chart or source listing is provided here. No records are changed other than a shifting of codes.

KMUST10 provides occupational demand projections for a designated period of time from one to ten years. The output file is SYSPRINT DD SYSOUT=A and gives initial year employment, expansion needs, replacement needs, and total needs for each DOT within each county in Kansas. Primary input files are 909202 (,SL) and 718800 (,SL) as created by KMUST07 and KMUST09. Five secondary files are used as input, including a DOT code and header file, a replacement factor file which includes state adjustment factors, a regional code and header file, a regional adjustment file, and a control record with the initial year of the projection period in columns 1-2 and the ending year of the projection period in columns 3-4. The projection period must not exceed ten years, and the initial projection year must be 1970 or later. The output report listing is sorted by occupation within region. State totals by occupation are accumulated, and they are printed at the end of the report. Figure 77 is a flow chart of KMUST10 while Figure 78 is a source listing. Figure 79 is a sample page of the output from KMUST10.

1. Open Files
2. Read Dun and Bradstreet Tape
3. Develop Number of Employees From Dun and Bradstreet Employment Code
4. Count Number of SIC's in Firm
5. Prorate Employment by SIC (Note: Prepare Separate Record for Each SIC)
6. Release Records to SORT
7. Read Supplemental Data Card (CARD-FILE)
8. Release Record to SORT
9. Close Appropriate Files
10. Return Record from SORT
11. Move Data to Output Area
12. Return Record from SORT
13. Is County in New Record Equal to County in Previous Record
14. Is SIC in New Record Equal to SIC in Previous Record
15. Add Employment in New Record to Employment in SIC in County
16. Write Tape Record
17. Write Summary of Run
18. Close Files, Stop Run

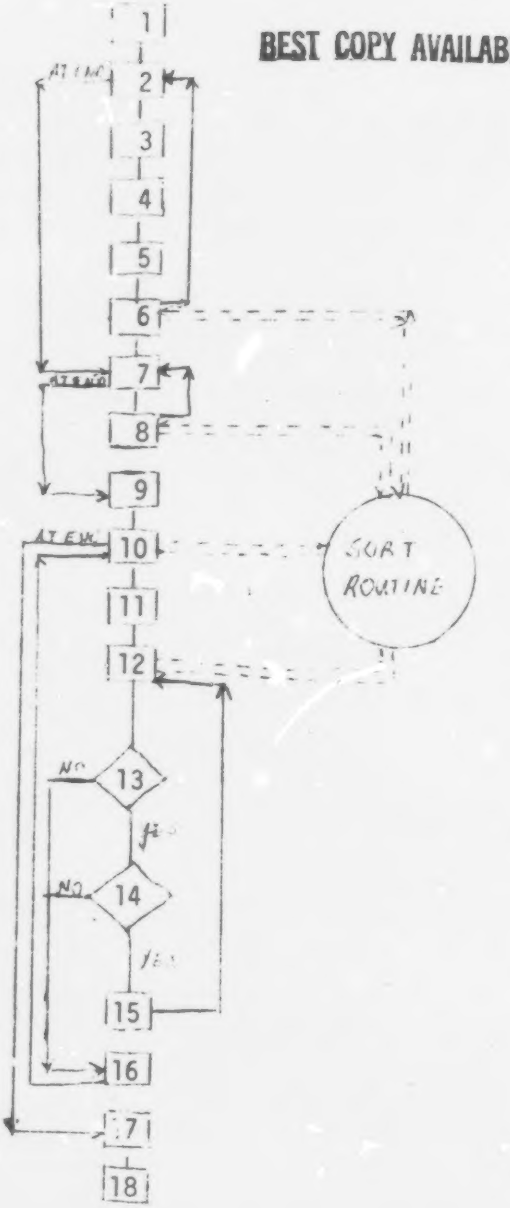


Figure 73: Flow Chart for KMUST05

```
IDENTIFICATION DIVISION.
PROGRAM-ID. 'KMUST5'.
AUTHOR. DONALDSON WOODS.
INSTALLATION. KANSAS STATE UNIVERSITY.
DATE-WRITTEN. 1/1/72.
DATE-COMPILED.
SECURITY. KMUST-JAMES HARRIS, DIRECTOR.
REMARKS. KMUST5 PROCESSES DNB TAPE AND SUPPLEMENTARY CARD
    RECORDS, PRODUCING EMPLOYMENT TOTAL SUMMARY RECORDS BY
    SIC WITHIN COUNTY.OUTPUT SUMMARY RECORDS ARE ON
    VOL=SER=718800 (1,SL), DCB=(RECFM=FB,LRECL=25,BLKSIZE=7200),
    DSN=DNB.SICTOT.
ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER. IBM-360 H50.
OBJECT-COMPUTER. IBM-360 H50.
INPUT-OUTPUT SECTION.
FILE-CONTROL. SELECT DNB-FILE ASSIGN TO 'TAPEIN' UTILITY.
    SELECT CARD-FILE ASSIGN TO 'CARD' UTILITY.
    SELECT DISK-FILE1 ASSIGN TO 'SORTIN' UTILITY.
    SELECT DISK-FILE2 ASSIGN TO 'SORTOUT' UTILITY.
    SELECT TAPE7-FILE ASSIGN TO 'TAPEOUT' UTILITY.
    SELECT PRINT-FILE ASSIGN TO  'SYSPRINT' UTILITY.
DATA DIVISION.
FILE SECTION.
SD  SORT-FILE DATA RECORD IS SORT-REC RECORDING MODE IS F.
01  SORT-REC.
    03 ST-FIELD                 PICTURE XX.
    03 CTY-FIELD                PICTURE XXX.
    03 SIC-FIELD                PICTURE XXX.
    03 EMPL-FIELD               PICTURE X(8).
    03 F1                       PICTURE X(9).
FD  DNB-FILE DATA RECORD IS DNB-REC RECORDING MODE IS F LABEL
    RECORDS ARE STANDARD BLOCK CONTAINS 10 RECORDS.
01  DNB-REC                     PICTURE X(350).
FD  CARD-FILE DATA RECORD IS CARD-REC RECORDING MODE IS F LABEL
    RECORDS ARE STANDARD BLOCK CONTAINS 90 RECORDS.
01  CARD-REC                    PICTURE X(80).
FD  DISK-FILE1 DATA RECORD IS DISK-REC1 RECORDING MODE IS F
    LABEL RECORDS ARE STANDARD BLOCK CONTAINS 288 RECORDS.
01  DISK-REC1                   PICTURE X(25).
FD  DISK-FILE2 DATA RECORD IS DISK-REC2 RECORDING MODE IS F
    LABEL RECORDS ARE STANDARD BLOCK CONTAINS 288 RECORDS.
01  DISK-REC2                   PICTURE X(25).
FD  TAPE7-FILE DATA RECORD IS TAPE7-REC RECORDING MODE IS F
    LABEL RECORDS ARE STANDARD BLOCK CONTAINS 238 RECORDS.
01  TAPE7-REC                   PICTURE X(25).
FD  PRINT-FILE DATA RECORD IS PRINT-REC RECORDING MODE IS F
    LABEL RECORDS ARE OMITTED.
01  PRINT-REC                   PICTURE X(133).
WORKING-STORAGE SECTION.
```

Figure 74: Source LIsting of KMUST05

```
77  ONB-TOTAL                  PICTURE 9(5) VALUE 0.
77  CARD-TOTAL                 PICTURE 9(5) VALUE 0.
77  UNKNOWN-EMPL-TOTAL         PICTURE 9(4) VALUE 0.
77  OUTPUT-RECORD-TOTAL        PICTURE 9(5) VALUE 0.
77  J                          PICTURE 99.
77  M                          PICTURE 99.
77  N                          PICTURE 99.
77  P                          PICTURE 99.
77  COUNT                      PICTURE 99.
01  COUNTER.
    03 EMPLOYEE-COUNT PICTURE 9(8).
    03 EMPLOYEE-COUNT1 REDEFINES EMPLOYEE-COUNT PICTURE X(8).
01  ONB-RECORD.
    03 FILLER                  PICTURE X(9).
    03 NATIONAL-CODE           PICTURE XXX.
    03 COUNTY-CODE             PICTURE XXX.
    03 STATE-CODE              PICTURE XX.
    03 FILLER                  PICTURE X(173).
    03 EMPLOYEES.
       05 MULT-FACTOR          PICTURE 9.
       05 EMPLOYEE-NUM         PICTURE 999.
       05 EMPLOYEE-CODE        PICTURE 9.
    03 FILLER                  PICTURE X(5).
    03 SIC-ARRAY               PICTURE X(4) OCCURS 6 TIMES.
01  WORK-SPACE.
    03 STATE-SPACE             PICTURE XX VALUE SPACES.
    03 COUNTY-SPACE            PICTURE XXX.
    03 SIC-SPACE               PICTURE XXX.
    03 EMPL-SPACE              PICTURE 9(8).
    03 EMPL-SPACE1 REDEFINES EMPL-SPACE PICTURE X(8).
    03 F2                      PICTURE X(9) VALUE SPACES.
01  TABLE-ARRAY.
    03 PCT1                    PICTURE X(60) VALUE '0600400500250250
   '40020020020020020020020020020020020020010010'.
    03 PCT2 REDEFINES PCT1.
      05 PCT                   PICTURE 9V99 OCCURS 20 TIMES.
01  PRINT-FMT1.
    03 FILLER                  PICTURE X(6) VALUE SPACES.
    03 FILLER                  PICTURE X(12) VALUE 'ONB TOTAL = '.
    03 ONB-EDIT                PICTURE ZZ,ZZ9.
    03 FILLER                  PICTURE X(5) VALUE SPACES.
    03 FILLER                  PICTURE X(13) VALUE 'CARD TOTAL = '.
    03 CARD-EDIT               PICTURE ZZ,ZZ9.
    03 FILLER                  PICTURE X(5) VALUE SPACES.
    03 FILLER                  PICTURE X(30) VALUE 'ONB RECORDS-NO E
   'MPLOYEES GIVEN'.
    03 NO-EMPL-EDIT            PICTURE Z,ZZ9.
    03 FILLER                  PICTURE X(5) VALUE SPACES.
    03 FILLER                  PICTURE X(23) VALUE 'OUTPUT TAPE9 REC
   'ORDS = '.
    03 OUTPUT-EDIT             PICTURE ZZ,ZZ9.
    03 FILLER                  PICTURE X(11) VALUE SPACES.
```

Figure 74: Source Listing for KMUST05 (Cont)

```
PROCEDURE DIVISION.
     SORT SORT-FILE ASCENDING KEY CTY-FIELD SIC-FIELD INPUT
     PROCEDURE RECORD-PROCESS OUTPUT PROCEDURE RECORD-SUMMARY.
     STOP RUN.
RECORD-PROCESS SECTION.
     OPEN INPUT DNB-FILE CARD-FILE DISK-FILE2 OUTPUT DISK-FILE1
     PRINT-FILE TAPE7-FILE.
PAR-1. READ DNB-FILE INTO DNB-RECORD AT END GO TO PAR-11.
     ADD 1 TO DNB-TOTAL. MOVE 0 TO P COUNT.
     IF EMPLOYEE-CODE = 2 ADD 1 TO UNKNOWN-EMPL-TOTAL GO TO
      PAR-1.
     IF MULT-FACTOR > 0 COMPUTE EMPLOYEE-COUNT = EMPLOYEE-NUM
      * 10 ** MULT-FACTOR ELSE MOVE EMPLOYEE-NUM TO
      EMPLOYEE-COUNT.
     PERFORM PAR-2 VARYING J FROM 1 BY 1 UNTIL J = 6.
PAR-2. IF SIC-ARRAY (J) > '     ' ADD 1 TO COUNT.
XX. GO TO PAR-3 PAR-4 PAR-5 PAR-6 PAR-7 PAR-8 DEPENDING ON
      COUNT.
PAR-3. MOVE EMPLOYEE-NUM TO EMPL-SPACE.
     PERFORM PAR-10.
     GO TO PAR-1.
PAR-4. MOVE 1 TO M. MOVE 2 TO N. GO TO PAR-9.
PAR-5. MOVE 3 TO M. MOVE 5 TO N. GO TO PAR-9.
PAR-6. MOVE 6 TO M. MOVE 9 TO N. GO TO PAR-9.
PAR-7. MOVE 10 TO M. MOVE 14 TO N. GO TO PAR-9.
PAR-8. MOVE 15 TO M. MOVE 20 TO N.
PAR-9. PERFORM P1 THRU P2 VARYING J FROM M BY 1 UNTIL J = N.
P1. MULTIPLY EMPLOYEE-COUNT BY PCT (J) GIVING EMPL-SPACE.
     PERFORM PAR-10.
P2. EXIT.
P3. GO TO PAR-1.
PAR-10. ADD 1 TO P. MOVE STATE-SPACE TO ST-FIELD.
     MOVE F2 TO F1. MOVE COUNTY-CODE TO CTY-FIELD.
     MOVE SIC-ARRAY (P) TO SIC-FIELD.
     MOVE EMPL-SPACE1 TO EMPL-FIELD.
     RELEASE SORT-REC.
PAR-11. READ CARD-FILE AT END GO TO PAR-12.
     ADD 1 TO CARD-TOTAL.
     MOVE CARD-REC TO SORT-REC.
     RELEASE SORT-REC.
     GO TO PAR-11.
PAR-12. CLOSE DNB-FILE CARD-FILE.
RECORD-SUMMARY SECTION.
     RETURN SORT-FILE AT END GO TO PAR-17.
PAR-13. MOVE CTY-FIELD TO COUNTY-SPACE.
PAR-14. MOVE SIC-FIELD TO SIC-SPACE.
     MOVE EMPL-FIELD TO EMPLOYEE-COUNT1.
```

Figure 74: Source Listing of KMUST05 (Cont)

```
PAR-15. RETURN SORT-FILE AT END GO TO PAR-17.
     IF CTY-FIELD > COUNTY-SPACE PERFORM PAR-16 GO TO PAR-13.
     IF SIC-FIELD NOT EQUAL TO SIC-SPACE PERFORM PAR-16
      GO TO PAR-14.
     MOVE EMPL-FIELD TO EMPL-SPACE1.
     ADD EMPL-SPACE TO EMPLOYEE-COUNT.
     GO TO PAR-15.
PAR-16. MOVE EMPLOYEE-COUNT TO EMPL-SPACE1.
     WRITE TAPE7-REC FROM WORK-SPACE.
     ADD 1 TO OUTPUT-RECORD-TOTAL.
PAR-17. MOVE DNB-TOTAL TO DNB-EDIT.
     MOVE CARD-TOTAL TO CARD-EDIT.
     MOVE UNKNOWN-EMPL-TOTAL TO NO-EMPL-EDIT.
     MOVE OUTPUT-RECORD-TOTAL TO OUTPUT-EDIT.
     WRITE PRINT-REC FROM PRINT-FMT1 AFTER 0.
     CLOSE DISK-FILE1 DISK-FILE2 TAPE7-FILE PRINT-FILE.
```

Figure 74: Source Listing for KMUST05 (Cont)

1. Open Files
2. Read Matrix Record
3. Is Year = 60
4. Is Occupation to be Eliminated
5. Is SIC to be Eliminated
6. Is SIC to be Modified
7. Modify SIC
8. Prepare BLS Record for KMUST10
9. Write New BLS Tape Record
10. Close Files, Stop Run

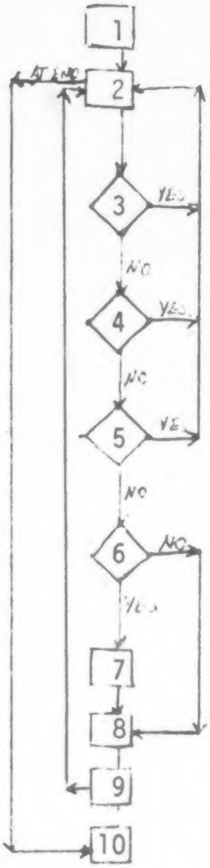


Figure 75: Flow Chart for KMUST07

```
01  TABLE-LOOKUP.
    03 T1                         PICTURE X(120) VALUE '000000010000100
    '0003000003124003132003133003135223135703135922313700313800320
    '000322600323000323100400000410000424800424900'.
    03 T11 REDEFINES T1           PICTURE X(6) OCCURS 20 TIMES.
    03 T2                         PICTURE X(60) VALUE '424950500000510000
    '006000006060207000000707300900000031331590910 0'.
    03 T22 REDEFINES T2           PICTURE X(6) OCCURS 10 TIMES.
PROCEDURE DIVISION.
    OPEN INPUT TAPE-FILE OUTPUT TEMP-FILE.
A.  READ TAPE-FILE INTO WORK-AREA (1) AT END GO TO 7.
    IF MATRIX-YR1 (1) = '60' GO TO A.
B.  MOVE 1 TO I.
    IF DOT-1 (1) = '1310' GO TO A.
    IF DOT-1 (1) = '1320' GO TO A.
    IF DOT-1 (1) = '1330' GO TO A.
    IF DOT-1 (1) = '1399' GO TO A.
     IF SIC-CODE (1) = '000000'  GO TO A.
     IF SIC-CODE (1) = '010000'  GO TO A.
     IF SIC-CODE (1) = '100000'  GO TO A.
     IF SIC-CODE (1) = '300000'  GO TO A.
     IF SIC-CODE (1) = '312400'  GO TO A.
     IF SIC-CODE (1) = '313200'  GO TO A.
     IF SIC-CODE (1) = '313300'  GO TO A.
     IF SIC-CODE (1) = '313522'  GO TO A.
     IF SIC-CODE (1) = '313570'  GO TO A.
     IF SIC-CODE (1) = '313592'  GO TO A.
     IF SIC-CODE (1) = '313700'  GO TO A.
     IF SIC-CODE (1) = '313800'  GO TO A.
     IF SIC-CODE (1) = '320000'  GO TO A.
     IF SIC-CODE (1) = '322600'  GO TO A.
     IF SIC-CODE (1) = '323000'  GO TO A.
     IF SIC-CODE (1) = '323100'  GO TO A.
     IF SIC-CODE (1) = '400000'  GO TO A.
     IF SIC-CODE (1) = '410000'  GO TO A.
     IF SIC-CODE (1) = '424800'  GO TO A.
     IF SIC-CODE (1) = '424900'  GO TO A.
     IF SIC-CODE (1) = '424950'  GO TO A.
     IF SIC-CODE (1) = '500000'  GO TO A.
     IF SIC-CODE (1) = '510000'  GO TO A.
     IF SIC-CODE (1) = '600000'  GO TO A.
     IF SIC-CODE (1) = '606020'  GO TO A.
     IF SIC-CODE (1) = '300000'  GO TO A.
     IF SIC-CODE (1) = '707300'  GO TO A.
     IF SIC-CODE (1) = '900000'  GO TO A.
     IF SIC-CODE (1) = '313315'  GO TO A.
     IF SIC-CODE (1) = '909100'  GO TO A.
```

Figure 76: Source Listing for KMUST07 (Cont)

```
XC. IF SIC-CODE (1) = '200000' MOVE '150' TO SIC (1) SIC (2)
      GO TO N.
    IF SIC-CODE (1) = '310000' MOVE '180' TO SIC (1) SIC (2)
      GO TO N.
    IF SIC-CODE (1) = '313850' MOVE '380' TO SIC (1) SIC (2)
      GO TO N.
    IF SIC-CODE (1) = '322000' MOVE '206' TO SIC (1) SIC (2)
      GO TO N.
    IF SIC-CODE (1) = '322890' MOVE '287' TO SIC (1) SIC (2)
      GO TO N.
    IF SIC-CODE (1) = '323186' MOVE '315' TO SIC (1) SIC (2)
      GO TO N.
    IF SIC-CODE (1) = '520000' MOVE '555' TO SIC (1) SIC (2)
      GO TO N.
    IF SIC-CODE (1) = '525940' MOVE '592' TO SIC (1) SIC (2)
      GO TO N.
    IF SIC-CODE (1) = '708080' MOVE '807' TO SIC (1) SIC (2)
      GO TO N.
    MOVE F2 (1) TO SIC (1) SIC (2).
N.  MOVE 1 TO J.
    MOVE DOT-1 (I) TO DOT (J).
    MOVE MATRIX-YR1 (I) TO YEAR (J).
    MOVE EMPL-TOTAL1 (I) TO EMPL-TOTAL (J).
    MOVE RATIO-EMPL1 (I) TO EMPL-RATIO (J).
    WRITE TEMP-REC FROM TAPE-AREA (J).
    GO TO A.
Z.  CLOSE TAPE-FILE TEMP-FILE.
    STOP RUN.
```

Figure 76: Source Listing for KMUST07 (Cont)

1. Open Files
2. Read CO-ADJ-FILE into the County Adjustment Table
3. Read DOT-NAME-FILE into Dot Name Table
4. Read CO-NAME-FILE into County Name Table
5. Is Number of Records in CO-NAME-FILE Equal to Number of Records in CO-ADJ-FILE
6. Read REPL-FACTOR-FILE into Replacement Table
7. Is Number of Records in REPL-FACTOR-FILE Equal to Number of Records in DOT-NAME-FILE
8. Move Zeroes to Accumulators
9. Read Year Parameters

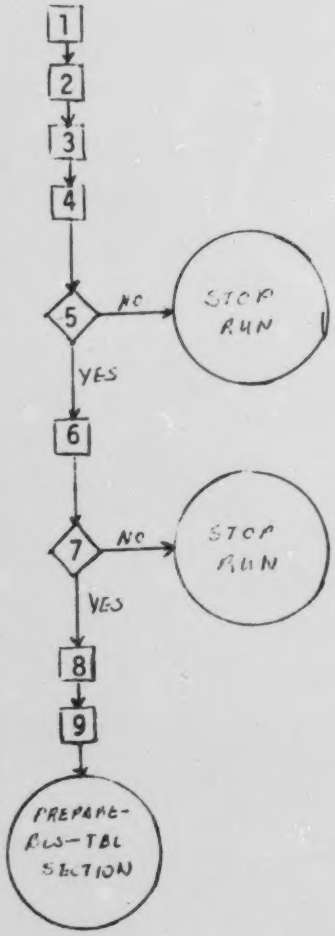


Figure 77: Flow Chart for HOUSEKEEPING SECTION of KMUST10

1. Has the First Record of the BLS Matrix File Been Read
2. Read BLS Record into Area 1
3. Read BLS Record into Area 2
4. Do Occupations in the BLS records Match the Occupations in the DOT-NAME-FILE and the REPL-FACTOR-FILE
5. Do the Pair of BLS Records (70-80) Match in Occupational Codes
6. Move Data to the BLS Tables
7. Read BLS Record into Area 1
8. Close the BLS Matrix File and Then Reopen it
9. Read BLS Record into Area 2
10. Is there a New SIC in the BLS Records

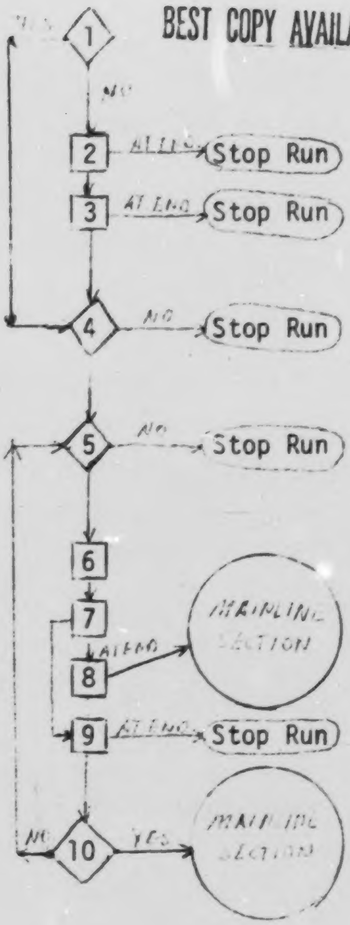


Figure 77: Flow Chart for PREPARE-BLS-TBL of KMUST10 (Cont)

1. Has First Record of Employment by SIC by County File Been Read
2. Read an Employment by SIC by County Record
3. Move County Code to County Control
4. Read an Employment by SIC by County Record
5. Change Health Codes to Appropriate Codes
6. Has County Changed Since Last Record
7. Perform 10 and 11
8. Has SIC Changed Since Last Record
9. Add Employment to Total Employment in SIC in County
10. Compute for County: Employment in SIC by Occupation, Expansion in SIC by Occupation, and Replacement by SIC by Occupation (Using State Adjustment Factors). Add results to County Totals.
11. Zero Total Employment in SIC in County and Add New Record Employment to Total Employment in SIC in County
12. Perform PREPARE-BLS-TBL
13. Is BLS SIC Appropriate for New Record
14. Adjust County Data on Basis of County Adjustment Factors
15. Add Data to State Data
16. Print County Report
17. Reset County Accumulators to Zero.

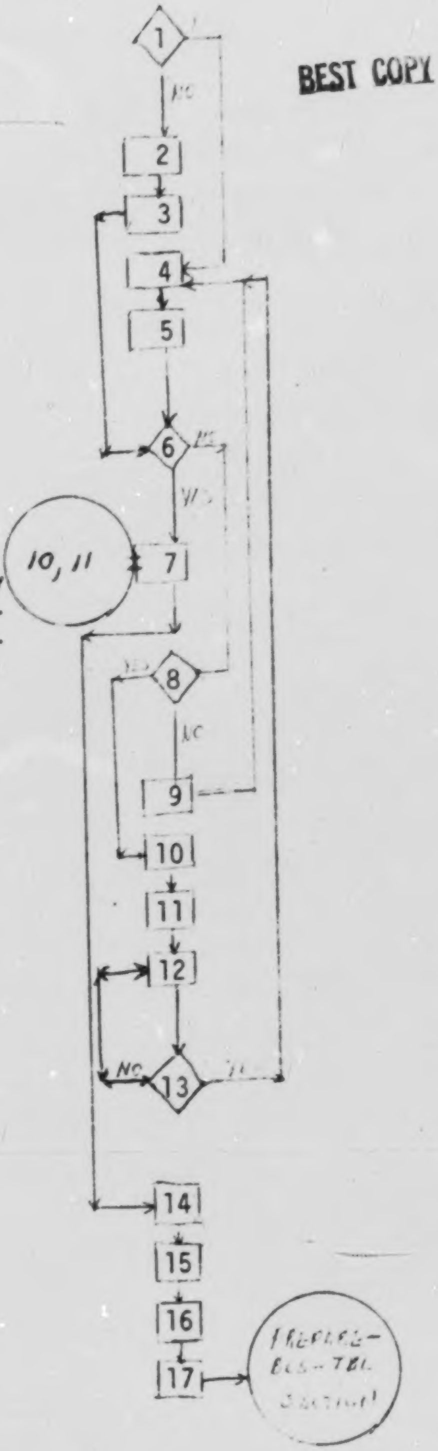


Figure 77: Flow Chart for MAINLINE SECTION of KMUST10 (Cont)

1. Perform the Expansion Routine (10 and 11 in the MAINLINE SECTION) for Last SIC in Last County
2. Perform Print County Routine (14, 15 and 16 in MAINLINE SECTION)
3. Print State Data
4. Close Files, Stop Run

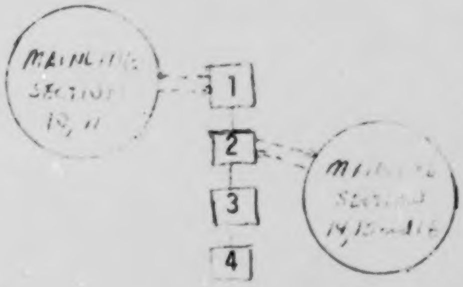


Figure 77: Flow Chart for WRAP-UP SECTION of KMUST10 (Cont)

```
IDENTIFICATION DIVISION.
PROGRAM-ID. 'KMUST10'.
AUTHOR. WOODS.
INSTALLATION. KANSAS STATE UNIVERSITY.
REMARKS. KMUST10 PRODUCES A LISTING OF OCCUPATIONAL DEMAND
    PROJECTIONS BY DOT WITHIN COUNTY FOR A DESIRED
    PROJECTION PERIOD.EACH DOT PROJECTION INCLUDES
    EXPANSION AND REPLACEMENT FACTORS.STATE PROJECTIONS
    BY DOT ALSO ARE PROVIDED AS THE FINAL OUTPUT RECORDS
    ON THE REPORT,A CONTROL RECORD IS REQUIRED TO
    ESTABLISH THE PROJECTION PERIOD DESIRED.THIS RECORD
    HAS 2 FIELDS IN BYTES 1-4 WHICH INDICATE LOWER AND
    UPPER LIMIT YEAR BOUNDARIES (FOR EXAMPLE 7276).
ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER. IBM-360 H50.
OBJECT-COMPUTER. IBM-360 H50.
INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT DOT-NAME-FILE ASSIGN TO 'DOT1' UTILITY.
    SELECT REPL-FACTOR-FILE ASSIGN TO 'REPL' UTILITY.
    SELECT COUNTY-NAME-FILE ASSIGN TO 'CNTY' UTILITY.
    SELECT CO-ADJ-FILE ASSIGN TO 'ADJ' UTILITY.
    SELECT BLS-MATRIX-FILE ASSIGN TO 'BLS' UTILITY.
    SELECT EMP-SIC-COUNTY-FILE ASSIGN TO 'SIC' UTILITY.
    SELECT PRINT-FILE ASSIGN TO 'SYSPRINT' UTILITY.
    SELECT YEAR-CONTROL-FILE ASSIGN TO 'SYSIN' UTILITY.
DATA DIVISION.
FILE SECTION.
FD  DOT-NAME-FILE DATA RECORD IS DOT-NAME-REC RECORDING MODE
    IS F LABEL RECORDS ARE STANDARD BLOCK CONTAINS 90 RECORDS.
01  DOT-NAME-REC                PICTURE X(80).
FD  REPL-FACTOR-FILE DATA RECORD IS REPL-FACTOR-REC
    RECORDING MODE IS F LABEL RECORDS ARE STANDARD BLOCK
    CONTAINS 90 RECORDS.
01  REPL-FACTOR-REC             PICTURE X(80).
FD  COUNTY-NAME-FILE DATA RECORD IS COUNTY-NAME-REC RECORDING
    MODE IS F LABEL RECORDS ARE STANDARD BLOCK CONTAINS
    90 RECORDS.
01  COUNTY-NAME-REC             PICTURE X(80).
FD  CO-ADJ-FILE DATA RECORD IS CO-ADJ-REC RECORDING MODE
    IS F LABEL RECORDS ARE STANDARD BLOCK CONTAINS 90 RECORDS.
01  CO-ADJ-REC                  PICTURE X(80).
FD  BLS-MATRIX-FILE DATA RECORD IS BLS-MATRIX-REC RECORDING
    MODE IS F LABEL RECORDS ARE STANDARD BLOCK CONTAINS
    250 RECORDS.
01  BLS-MATRIX-REC              PICTURE X(27).
```

Figure 78: Source Listing of KMUST10.

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FD   EMP-SIC-COUNTY-FILE DATA RECORD IS EMP-SIC-COUNTY-REC
     RECORDING MODE IS F LABEL RECORDS ARE STANDARD BLOCK
     CONTAINS 288 RECORDS.
01   EMP-SIC-COUNTY-REC          PICTURE X(25).
FD   PRINT-FILE DATA RECORD IS PRINT-LINE RECORDING MODE IS
     F LABEL RECORDS ARE OMITTED BLOCK CONTAINS 100 RECORDS.
01   PRINT-LINE.
     03 FILLER                   PICTURE X.
     03 PRINT-REC                PICTURE X(80).
FD   YEAR-CONTROL-FILE DATA RECORD IS YEAR-CONTROL-REC RECORDING
     MODE IS F LABEL RECORDS ARE OMITTED.
01   YEAR-CONTROL-RECORD         PICTURE X(80).
WORKING-STORAGE SECTION.
01   TABLE-AREAS.
     02 DOT-NAME-TBL OCCURS 200 TIMES.
         03 DOT-NO-IN-DOT-TBL.
             04 DIGIT1 PICTURE X.
             04 DIGIT2  PICTURE X.
             04 DIGIT3  PICTURE X.
             04 DIGIT4   PICTURE X.
         03 DOT-NAME                       PICTURE X(30).
     02 RPL-FCTR-TBL OCCURS 200 TIMES.
         03 DOT-NO-IN-RPL-TBL              PICTURE X(4).
         03 RPL-FCTR                       PICTURE 99V999.
         03 ST-ADJ-FAC               PICTURE 99V99.
       -03 SIGNY                     PICTURE X.
         03 ESC-EXP-FACT             PICTURE S9999.
     02 CO-NAME-TBL OCCURS 200 TIMES.
         03 CO-NO                          PICTURE X(3).
         03 CO-NAME                        PICTURE X(20).
          03 CO-EXP-ADJ                  PICTURE V9999.
     02 CO-DATA-TBL OCCURS 200 TIMES.
         03 CO-DOT-FOR-OCC                 PICTURE X(4).
        03  CO-EMP-IN-OCC                    PICTURE S9999999V99.
        03  CO-EXPAND-IN-OCC                 PICTURE S9999999V99.
        03  CO-RPL-IN-OCC                    PICTURE S9999999V99.
        03  CO-TOT-NEED-IN-OCC               PICTURE S9999999V99.
     02 ST-DATA-TBL OCCURS 200 TIMES.
         03 ST-DOT-FOR-OCC     PICTURE X(4).
        03  ST-EMP-IN-OCC            PICTURE S9999999V99.
        03  ST-EXPAND-IN-OCC         PICTURE S9999999V99.
        03 ST-RPL-IN-OCC             PICTURE S9999999V99.
        03  ST-TOT-NEED-IN-OCC       PICTURE S9999999V99.
    02 BLS-70-TBL OCCURS 200 TIMES.
        03 BLS-SIC-70                      PICTURE X(3).
        03 BLS-DOT-70                      PICTURE X(4).
        03 BLS-YR-70                       PICTURE X(2).
        03 BLS-EMP-70                      PICTURE 9(9).
        03 BLS-RATIO-70                    PICTURE 9V9(8).
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Figure 78: Source Listing of KMUST10 (Cont)

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      02 BLS-80-TBL OCCURS 200 TIMES.
         03 BLS-SIC-80                       PICTURE X(3).
         03 BLS-DOT-80                       PICTURE X(4).
         03 BLS-YR-80                        PICTURE X(2).
         03 BLS-EMP-80                       PICTURE 9(9).
         03 BLS-RATIO-80                     PICTURE 9V9(8).
      02 COUNTY-ADJUSTMENT-FACTORS OCCURS 200 TIMES.
         03 COUNTY-NUMBER-ADJ PICTURE XXX.
         03 SIGNX             PICTURE X.
         03 COUNTY-ADJUSTMENT-FACTOR  PICTURE SV9999.
 01   INPUT-AREAS.
      02 CO-NAME-INPUT.
         03 FILLER                           PICTURE X(2).
         03 CO-NO-IN                         PICTURE X(3).
         03 CO-NAME-IN                       PICTURE X(18).
         03 CO-EXP-ADJ-IN                    PICTURE V9999.
      02 YEAR-PARAMETERS.
         03 FIRST-YR                         PICTURE 99.
         03 SECOND-YR                        PICTURE 99.
      02 BLS-INPUT-70.
         03 BLS-SIC-70-IN                    PICTURE X(3).
         03 BLS-DOT-70-IN                    PICTURE X(4).
         03 BLS-YR-70-IN                     PICTURE X(2).
         03 BLS-EMP-70-IN                    PICTURE 9(9).
         03 BLS-RATIO-70-IN                  PICTURE 9V9(8).
      02 BLS-INPUT-80.
         03 BLS-SIC-80-IN                    PICTURE X(3).
         03 BLS-DOT-80-IN                    PICTURE X(4).
         03 BLS-YR-80-IN                     PICTURE X(2).
         03 BLS-EMP-80-IN                    PICTURE 9(9).
         03 BLS-RATIO-80-IN                  PICTURE 9V9(8).
      02 STANDARD-INPUT-AREA.
         03 FILLER                           PICTURE X(2).
         03 CO-IN                            PICTURE X(3).
         03 SIC-IN                           PICTURE X(3).
         03 NO-OF-EMP-IN                     PICTURE 9(8).
 01   OUTPUT-AREAS.
      02 FIRST-HEADER.
         03 HEAD1 PICTURE X(9) VALUE 'REGION = '.
         03 CO-NAME-OUT PICTURE X(20).
         03 FILLER PICTURE X(43) VALUE SPACES.
         03 WORD-PAGE PICTURE X(5) VALUE 'PAGE '.
         03 PAGE-NO PICTURE ZZ9.
      02 SECOND-HEADER.
         03 FILLER PICTURE X(26) VALUE SPACES.
         03 HEAD02 PICTURE X(54) VALUE
            'STATE DEPARTMENT OF EDUCATION'.
      02 THIRD-HEADER.
         03 FILLER PICTURE X(24) VALUE SPACES.
         03 HEAD03 PICTURE X(56) VALUE
            'DIVISION OF VOCATIONAL EDUCATION'.
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Figure 78: Source Listing of KMUST10 (Cont)

```
    02 FOURTH-HEADER.
       03 FILLER PICTURE X(33) VALUE SPACES.
       03 HEAD4 PICTURE X(47) VALUE
          'K-MUST PROJECT'.
    02 FIFTH-HEADER.
       03 FILLER PICTURE X(27) VALUE SPACES.
       03 HEAD5 PICTURE X(53) VALUE
          'MANPOWER NEEDS PROJECTIONS'.
    02 SIXTH-HEADER.
       03 FILLER PICTURE X(35) VALUE SPACES.
       03 HEAD6A PICTURE X(2) VALUE '19'.
       03 FIRST-YR-OUT PICTURE ZZ.
       03 HEAD6B PICTURE X(5) VALUE ' - 19'.
       03 SECOND-YR-OUT PICTURE ZZ.
       03 FILLER PICTURE X(34) VALUE SPACES.
    02 SEVENTH-HEADER.
       03 FILLER PICTURE X(10) VALUE SPACES.
       03 HEAD7A PICTURE X(10) VALUE 'OCCUPATION'.
       03 FILLER PICTURE X(14) VALUE SPACES.
       03 HEAD7B PICTURE X(13) VALUE 'PRESENT'.
       03 HEAD7C PICTURE X(18) VALUE 'TOTAL     EXPANSION'.
       03 HEAD7D PICTURE X(15) VALUE '    REPLACEMENT'.
    02 EIGHTH-HEADER.
       03 FILLER PICTURE X(33) VALUE SPACES.
       03 HEAD8 PICTURE X(47) VALUE
          'EMPLOYMENT    NEEDS      NEEDS         NEEDS'.
    02 STANDARD-LINE.
       03 DOT-NAME-OUT.
          04 FIRST-PART  PICTURE X(5).
          04 SUB-HEAD-1.
             05 SEC-PART   PICTURE X(5).
             05 SUB-HEAD-2   PICTURE X(20).
       03 FILLER PICTURE X(3) VALUE SPACES.
       03 PRESENT-EMP PICTURE ZZZZZZZ9.
       03 FILLER PICTURE X(4) VALUE SPACES.
       03 TOTAL-NEEDS PICTURE --------9.
       03 FILLER PICTURE X(3) VALUE SPACES.
       03 EXPANSION-NEEDS PICTURE --------9.
       03 FILLER PICTURE X(6) VALUE SPACES.
       03 REPLACEMENT-NEEDS PICTURE ZZZZZZZ9.
       03 FILLER PICTURE X(2)  VALUE SPACES.
01  CONSTANTS-EXC.
    02 NO-OF-CO                        PICTURE 999 VALUE ZEROES.
    02 NO-OF-DOTS                      PICTURE 999 VALUE ZEROES.
    02 SIC-CONTROL                     PICTURE X(3).
    02 YR-NOW                          PICTURE 99.
    02 YR-FUT                          PICTURE 99.
    02 CO-CONTROL                      PICTURE X(3) VALUE SPACES.
```

Figure 78: Source Listing of KMUST10 (Cont)

```
                                            PICTURE 9(9) VALUE ZEROES.
  02 TOT-EMP-SIC
  02 PAGE-COUNT  PICTURE 999 VALUE 0.
                                            PICTURE 99 VALUE 60.
  02 LINE-COUNT
                                            PICTURE 999 VALUE 1.
  02 I
                                            PICTURE 999 VALUE 1.
  02 J
                                            PICTURE 999 VALUE 0.
  02 K
                                            PICTURE 999 VALUE 1.
  02 L
  02   WORK-1     PICTURE S9999999V9999.
  02   WORK-2     PICTURE S9999999V9999.
  02   WORK-3     PICTURE S9999999V9999.
  02   WORK-4     PICTURE S9999999V9999.
  02   WORK-5     PICTURE S9999999V9999.
  02   WORK-6     PICTURE S9999999V9999.
  02   WORK-7     PICTURE S9999999V9999.
  02   WORK-8     PICTURE S9999999V9999.
  02   WORK-9     PICTURE S9999999V9999.
  02   WORK-10    PICTURE S9999999V9999.
  02   DUMMY-AREA   PICTURE X.
  02    R    PICTURE 999 VALUE 1.
    02 CHECK-VALUE  PICTURE S99999999V9999.
01  WORKING-RATIO             PICTURE S9999999V99.
PROCEDURE DIVISION.
HOUSEKEEPING SECTION.
OPEN-FILES.
    OPEN INPUT DOT-NAME-FILE, REPL-FACTOR-FILE, BLS-MATRIX-FILE,
      COUNTY-NAME-FILE, YEAR-CONTROL-FILE, EMP-SIC-COUNTY-FILE:
    CO-ADJ-FILE OUTPUT PRINT-FILE.
PREPARE-CO-ADJ-TABLE.
    READ CO-ADJ-FILE INTO COUNTY-ADJUSTMENT-FACTORS (I)
    AT END MOVE 1 TO I GO TO PREPARE-DOT-ID-TBL.
    IF SIGNX (I) = '-' COMPUTE COUNTY-ADJUSTMENT-FACTOR (I) =
    COUNTY-ADJUSTMENT-FACTOR (I) * (-1).
    COMPUTE COUNTY-ADJUSTMENT-FACTOR (I) =
    COUNTY-ADJUSTMENT-FACTOR (I) / 10.
    ADD 1 TO I.
    GO TO PREPARE-CO-ADJ-TABLE.
PREPARE-DOT-ID-TBL.
    READ DOT-NAME-FILE INTO DOT-NAME-TBL (I) AT END SUBTRACT
      1 FROM I MOVE I TO NO-OF-DOTS MOVE 1 TO I GO TO
      PREPARE-CO-NAME-TBL.
    ADD 1 TO I.
    GO TO PREPARE-DOT-ID-TBL.
PREPARE-CO-NAME-TBL.
```

Figure 78: Source Listing of KMUST10 (Cont)

```
       READ COUNTY-NAME-FILE INTO CO-NAME-INPUT AT END SUBTRACT 1
         FROM I MOVE I TO NO-OF-CO MOVE 1 TO I GO TO
         PREPARE-RPL-FCTR-TBL.
       MOVE CO-NO-IN TO CO-NO (I).
       MOVE CO-NAME-IN TO CO-NAME (I).
       MOVE CO-EXP-ADJ-IN TO CO-EXP-ADJ (I).
       IF COUNTY-NUMBER-ADJ (I) NOT = CO-NO (I) MOVE 'ERROR 0' TO
       PRINT-REC WRITE PRINT-LINE AFTER ADVANCING 1 LINES
       STOP RUN.
       ADD 1 TO I.
       GO TO PREPARE-CO-NAME-TBL.
   PREPARE-RPL-FCTR-TBL.
       READ REPL-FACTOR-FILE INTO RPL-FCTR-TBL (I) AT END SUBTRACT 1
         FROM I GO TO CHK-NO-ENTRIES.
      IF DOT-NO-IN-DOT-TBL (I) IS NOT EQUAL TO
        DOT-NO-IN-RPL-TBL (I) MOVE 'ERROR1' TO PRINT-REC, WRITE
        PRINT-LINE AFTER ADVANCING 1 LINES, STOP RUN.
      MOVE DOT-NO-IN-RPL-TBL (I) TO CO-DOT-FOR-OCC (I)
        ST-DOT-FOR-OCC (I).
      IF SIGNY (I) = '-' COMPUTE ESC-EXP-FACT (I) =
      ESC-EXP-FACT (I) * (-1).
      ADD 1 TO I.
      GO TO PREPARE-RPL-FCTR-TBL.
  CHK-NO-ENTRIES.
      IF I IS NOT EQUAL TO NO-OF-DOTS MOVE 'ERROR2' TO PRINT-REC,
        WRITE PRINT-LINE AFTER ADVANCING 1 LINES, STOP RUN.
  PREPARE-FOR-NEW-COUNTY.
      MOVE 0 TO I.
      PERFORM ZERO-CO-ACCUMULATORS THRU ZERO-ST-ACCUMULATORS
        VARYING J FROM 1 BY 1 UNTIL J = 200.
  ZERO-CO-ACCUMULATORS.
      MOVE ZEROES TO CO-EXPAND-IN-OCC (J), CO-RPL-IN-OCC (J),
        CO-TOT-NEED-IN-OCC (J), CO-EMP-IN-OCC (J).
  EXIT1.
      EXIT.
  ZERO-ST-ACCUMULATORS.
      MOVE ZEROES TO ST-EXPAND-IN-OCC (J), ST-RPL-IN-OCC (J)
        ST-TOT-NEED-IN-OCC (J), ST-EMP-IN-OCC (J).
  READ-YR-PARAMETERS.
      READ YEAR-CONTROL-FILE INTO YEAR-PARAMETERS AT END
        GO TO CHK-TRANSFER-DATA.
      MOVE FIRST-YR TO FIRST-YR-OUT.
      MOVE SECOND-YR TO SECOND-YR-OUT.
      ADD 1 TO SECOND-YR.
  PREPARE-BLS-TBL SECTION.
```

Figure 78: Source Listing of KMUST10 (Cont)

```
CHK-TRANSFER-DATA.
     IF I IS EQUAL TO ZERO MOVE 1 TO I GO TO FIRST-REC-ROUTINE.
     IF CO-DOT-FOR-OCC (I) IS NOT EQUAL TO BLS-DOT-70-IN MOVE
       'ERROR4' TO PRINT-REC WRITE PRINT-LINE AFTER ADVANCING 1
       LINES, STOP RUN.
     IF BLS-DOT-70-IN IS NOT EQUAL TO BLS-DOT-80-IN MOVE 'ERROR5'
       TO PRINT-REC WRITE PRINT-LINE AFTER ADVANCING 1 LINES.
       STOP RUN.
     MOVE BLS-INPUT-70 TO BLS-70-TBL (I).
     MOVE BLS-INPUT-80 TO BLS-80-TBL (I).
     ADD 1 TO I.
     MOVE '999' TO BLS-SIC-70-IN.
READ-BLS-RECORDS.
     READ BLS-MATRIX-FILE INTO BLS-INPUT-70 AT END MOVE 0 TO I
       CLOSE BLS-MATRIX-FILE OPEN INPUT BLS-MATRIX-FILE
       GO TO EXIT2.
     READ BLS-MATRIX-FILE INTO BLS-INPUT-80 AT END MOVE 'ERROR6'
       TO PRINT-REC. WRITE PRINT-LINE AFTER ADVANCING 1 LINES,
       STOP RUN.
     COMPUTE J = I - 1.
     IF BLS-SIC-70-IN IS NOT EQUAL TO BLS-SIC-70 (J) MOVE 1 TO I
       GO TO EXIT2.
     GO TO CHK-TRANSFER-DATA.
FIRST-REC-ROUTINE.
     READ BLS-MATRIX-FILE INTO BLS-INPUT-70 AT END MOVE 'ERROR7'
       TO PRINT-REC, WRITE PRINT-LINE AFTER ADVANCING 1 LINES,
       STOP RUN.
     READ BLS-MATRIX-FILE INTO BLS-INPUT-80 AT END MOVE 'ERROR7B'
       TO PRINT-REC WRITE PRINT-LINE AFTER ADVANCING 1 LINES
       STOP RUN.
     GO TO CHK-TRANSFER-DATA.
EXIT2.
     EXIT.
MAINLINE SECTION.
FIRST-COUNTY-CHECK.
     IF CO-CONTROL NOT EQUAL TO SPACES GO TO STANDARD-READ-SIC.
     READ EMP-SIC-COUNTY-FILE INTO STANDARD-INPUT-AREA, AT END
       MOVE 'ERROR8' TO PRINT-REC. WRITE PRINT-LINE AFTER
       ADVANCING 1 LINES, STOP RUN.
*    MOVE CO-IN TO CO-CONTROL.
     GO TO STANDARD-CHK.
STANDARD-READ-SIC.
     READ EMP-SIC-COUNTY-FILE INTO STANDARD-INPUT-AREA AT END
       GO TO FINISH-LAST-COUNTY.
     IF SIC-IN = '999' GO TO STANDARD-READ-SIC.
     IF SIC-IN = '806' MOVE '800' TO SIC-IN.
```

Figure 78: Source Listing of KMUST10 (Cont)

```
STANDARD-CHK.
    IF CO-IN IS GREATER THAN CO-CONTROL, MOVE CO-IN TO CO-CONTROL
    PERFORM EXPANSION-ROUTINE THRU EXIT4 ADD 1 TO K
    GO TO PRINT-CO-DATA.
    IF SIC-IN NOT LESS THAN BLS-SIC-70-IN GO TO
      EXPANSION-ROUTINE.
    ADD NO-OF-EMP-IN TO TOT-EMP-SIC.
    GO TO STANDARD-READ-SIC.
EXPANSION-ROUTINE.
    COMPUTE WORK-1 = (FIRST-YR - 70) / 10
      * (BLS-RATIO-80 (R) - BLS-RATIO-70 (R)) +
      BLS-RATIO-70 (R).
    COMPUTE WORK-2 = TOT-EMP-SIC * WORK-1.
    COMPUTE WORK-2 = WORK-2 * ST-ADJ-FAC (R).
    COMPUTE CHECK-VALUE = BLS-EMP-70 (R) - 1.
    IF CHECK-VALUE < 1 GO TO CHECK-ROUTINE.
    COMPUTE WORK-3 = BLS-EMP-80 (R) / BLS-EMP-70 (R) - 1.
    COMPUTE WORK-4 = (SECOND-YR - FIRST-YR) / 10.
    COMPUTE WORK-5 = WORK-3 * WORK-4.
    COMPUTE WORK-6 = WORK-5 * WORK-2.
    COMPUTE WORK-7 = WORK-2 + WORK-6.
    COMPUTE WORK-8 = (WORK-2 + WORK-7) / 2.
    COMPUTE WORK-9 = RPL-FCTR (R) * WORK-8 * 10 * WORK-4.
    COMPUTE WORK-10 = WORK-9 + WORK-6.
    ADD WORK-2 TO CO-EMP-IN-OCC (R).
    ADD WORK-6 TO CO-EXPAND-IN-OCC (R).
    ADD WORK-9 TO CO-RPL-IN-OCC (R).
    ADD 1 TO R.
    IF R NOT GREATER THAN NO-OF-DOTS GO TO EXPANSION-ROUTINE.
    MOVE 1 TO R.
    MOVE ZEROES TO TOT-EMP-SIC.
    ADD NO-OF-EMP-IN TO TOT-EMP-SIC.
EXIT4.
    EXIT.
CHECK-FOR-NEW-UPPER-LIMIT.
    PERFORM CHK-TRANSFER-DATA THRU EXIT2.
    IF SIC-IN IS LESS THAN BLS-SIC-70-IN GO TO
      STANDARD-READ-SIC.
    GO TO CHECK-FOR-NEW-UPPER-LIMIT.
PRINT-CO-DATA.
    COMPUTE WORKING-RATIO = CO-EXPAND-IN-OCC (1) /
    CO-EMP-IN-OCC (1).
    PERFORM COMPILE-STATE-DATA THRU EXIT3 VARYING L FROM 1 BY 1
      UNTIL L = NO-OF-DOTS.
```

Figure 78: Source Listing of KMUST10 (Cont)

```
COMPILE-STATE-DATA.
    IF CO-EMP-IN-OCC (L) < 0.5 GO TO CONT-JUMP.
    ADD CO-EMP-IN-OCC (L) TO ST-EMP-IN-OCC (L).
    COMPUTE CO-EXPAND-IN-OCC (L) = (CO-EXPAND-IN-OCC (L) /
    CO-EMP-IN-OCC (L) - WORKING-RATIO +
    COUNTY-ADJUSTMENT-FACTOR (K) * (SECOND-YR - FIRST-YR))
    * CO-EMP-IN-OCC (L).
    COMPUTE CO-EXPAND-IN-OCC (L) = CO-EXPAND-IN-OCC (L) +
    CO-EXP-ADJ (K) * ESC-EXP-FACT (L).
    ADD CO-EXPAND-IN-OCC (L) TO CO-TOT-NEED-IN-OCC (L).
    ADD CO-RPL-IN-OCC (L) TO CO-TOT-NEED-IN-OCC (L).
CONT-JUMP.
    ADD CO-EXPAND-IN-OCC (L) TO ST-EXPAND-IN-OCC (L).
    ADD CO-RPL-IN-OCC (L) TO ST-RPL-IN-OCC (L).
    ADD CO-EXPAND-IN-OCC (L) CO-RPL-IN-OCC (L)
    GIVING CO-TOT-NEED-IN-OCC (L).
    ADD CO-TOT-NEED-IN-OCC (L) TO ST-TOT-NEED-IN-OCC (L).
    IF CO-EMP-IN-OCC (L) IS LESS THAN .5 GO TO EXIT3.
    ADD 0.5, CO-EMP-IN-OCC (L) GIVING PRESENT-EMP.
    ADD 0.5, CO-EXPAND-IN-OCC (L) GIVING EXPANSION-NEEDS.
    ADD 0.5, CO-RPL-IN-OCC (L) GIVING REPLACEMENT-NEEDS.
    ADD 0.5, CO-TOT-NEED-IN-OCC (L) GIVING TOTAL-NEEDS.
    MOVE SPACES TO DOT-NAME-OUT.
    MOVE DOT-NAME (L) TO SUB-HEAD-2.
    IF DIGIT3 (L) = '0' MOVE DOT-NAME (L) TO SUB-HEAD-1.
    IF DIGIT2 (L) = '0' MOVE DOT-NAME (L) TO DOT-NAME-OUT.
    IF LINE-COUNT IS GREATER THAN 50, ADD 1 TO PAGE-COUNT,
    PERFORM WRITE-HEADERS.
    ADD 2 TO LINE-COUNT.
    MOVE STANDARD-LINE TO PRINT-REC.
    WRITE PRINT-LINE AFTER ADVANCING 2 LINES.
EXIT3.
    EXIT.
FINISHED-PRT-CO-DATA.
    PERFORM ZERO-CO-ACCUMULATORS VARYING J FROM 1 BY 1 UNTIL
      J IS GREATER THAN 200.
    MOVE ZERO TO I.
    MOVE 60 TO LINE-COUNT.
    GO TO CHK-TRANSFER-DATA.
WRITE-HEADERS.
    MOVE 10 TO LINE-COUNT.
    MOVE CO-NAME (K) TO CO-NAME-OUT.
    MOVE PAGE-COUNT TO PAGE-NO.
    MOVE FIRST-HEADER TO PRINT-REC.
    WRITE PRINT-LINE AFTER ADVANCING 0 LINES.
    MOVE SECOND-HEADER TO PRINT-REC.
    WRITE PRINT-LINE AFTER ADVANCING 2 LINES.
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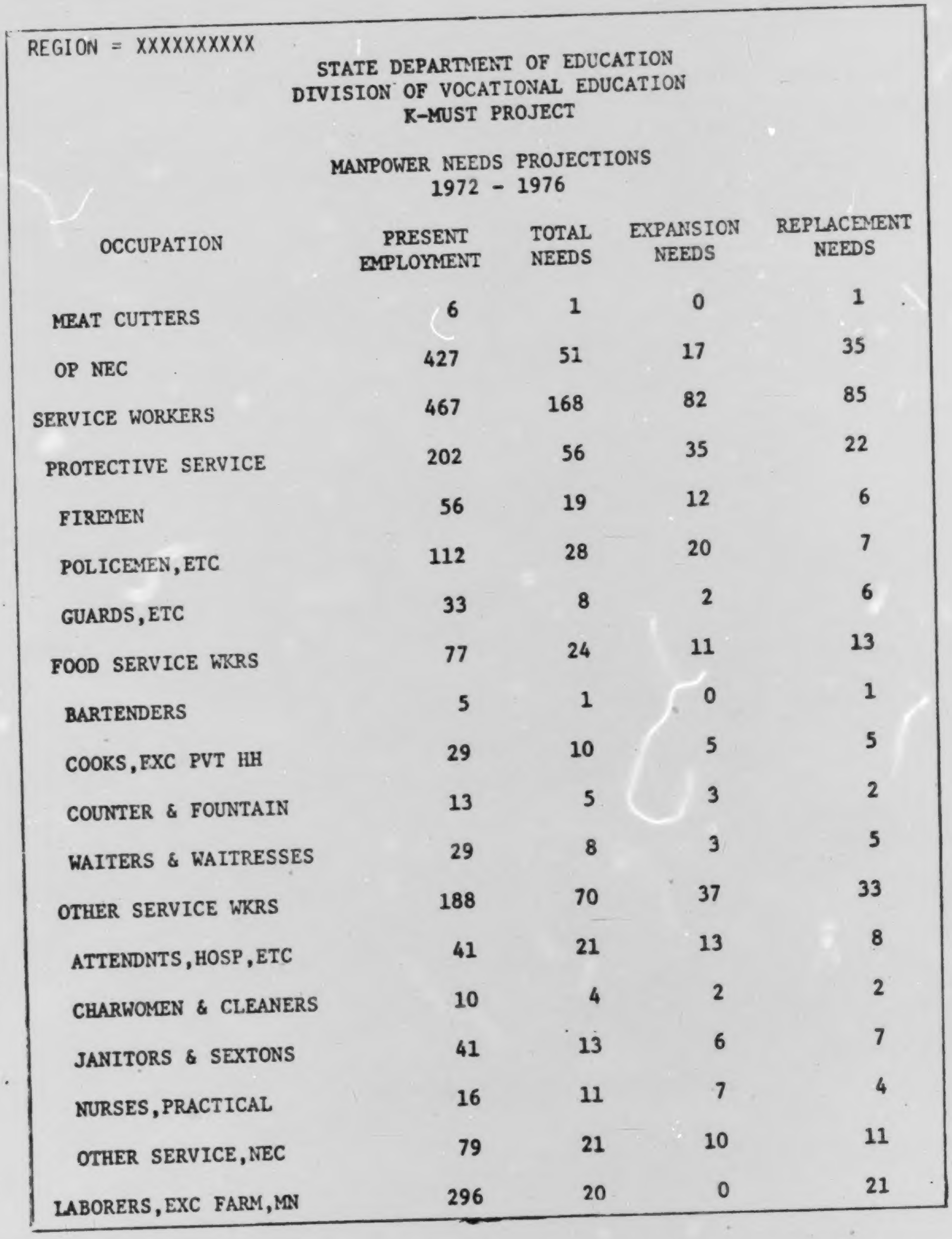
Figure 78: Source Listing of KMUST10 (Cont)

```
               MOVE THIRD-HEADER TO PRINT-REC.
               WRITE PRINT-LINE AFTER ADVANCING 1 LINES.
               MOVE FOURTH-HEADER TO PRINT-REC.
               WRITE PRINT-LINE AFTER ADVANCING 1 LINES.
               MOVE FIFTH-HEADER TO PRINT-REC.
               WRITE PRINT-LINE AFTER ADVANCING 2 LINES.
               MOVE SIXTH-HEADER TO PRINT-REC.
               WRITE PRINT-LINE AFTER ADVANCING 1 LINES.
               MOVE SEVENTH-HEADER TO PRINT-REC.
               WRITE PRINT-LINE AFTER ADVANCING 2 LINES.
               MOVE EIGHTH-HEADER TO PRINT-REC.
               WRITE PRINT-LINE AFTER ADVANCING 1 LINES.
           WRAP-UP SECTION.
           FINISH-LAST-COUNTY.
               ADD 1 TO K.
               PERFORM EXPANSION-ROUTINE THRU EXIT4.
               PERFORM PRINT-CO-DATA THRU EXIT3.
           PRINT-ST-DATA.
               ADD 1 TO PAGE-COUNT.
               MOVE 60 TO LINE-COUNT.
               MOVE SPACES TO HEAD1.
               MOVE 'STATEWIDE TOTALS' TO CO-NAME (K).
               PERFORM WRITE-HEADERS.
               PERFORM STATE-WRITE-PAR VARYING L FROM 1 BY 1 UNTIL
                 L IS EQUAL TO NO-OF-DOTS.
           STATE-WRITE-PAR.
               ADD 0.5, ST-EMP-IN-OCC (L) GIVING PRESENT-EMP.
               ADD 0.5, ST-EXPAND-IN-OCC (L) GIVING EXPANSION-NEEDS.
               ADD 0.5, ST-RPL-IN-OCC (L) GIVING REPLACEMENT-NEEDS.
               ADD 0.5, ST-TOT-NEED-IN-OCC (L) GIVING TOTAL-NEEDS.
               MOVE SPACES TO DOT-NAME-OUT.
               MOVE DOT-NAME (L) TO SUB-HEAD-2.
               IF DIGIT3 (L) = '0' MOVE DOT-NAME (L) TO SUB-HEAD-1.
               IF DIGIT2 (L) = '0' MOVE DOT-NAME (L) TO DOT-NAME-OUT.
               IF LINE-COUNT IS GREATER THAN 50 ADD 1 TO PAGE-COUNT
                 PERFORM WRITE-HEADERS.
               ADD 2 TO LINE-COUNT.
               MOVE STANDARD-LINE TO PRINT-REC.
               WRITE PRINT-LINE AFTER 2.
           FINISH.
               CLOSE DOT-NAME-FILE, REPL-FACTOR-FILE, BLS-MATRIX-FILE,
                 COUNTY-NAME-FILE, YEAR-CONTROL-FILE, EMP-SIC-COUNTY-FILE,
               CO-ADJ-FILE PRINT-FILE.
               STOP RUN.
           CHECK-ROUTINE.
               IF R IS NOT EQUAL TO NO-OF-DOTS ADD 1 TO R GO TO
                 EXPANSION-ROUTINE.
               MOVE 1 TO R.
               MOVE ZEROES TO TOT-EMP-SIC.
               ADD NO-OF-EMP-IN TO TOT-EMP-SIC.
               GO TO EXIT4.
```

Figure 78: Source Listing of KMUST10 (Cont)



```
REGION = XXXXXXXXXX
                         STATE DEPARTMENT OF EDUCATION
                       DIVISION OF VOCATIONAL EDUCATION
                               K-MUST PROJECT

                         MANPOWER NEEDS PROJECTIONS
                                1972 - 1976

   OCCUPATION                PRESENT      TOTAL   EXPANSION   REPLACEMENT
                            EMPLOYMENT    NEEDS     NEEDS        NEEDS

  MEAT CUTTERS                   6          1         0            1

  OP NEC                       427         51        17           35

 SERVICE WORKERS               467        168        82           85

  PROTECTIVE SERVICE           202         56        35           22

   FIREMEN                      56         19        12            6

   POLICEMEN,ETC               112         28        20            7

   GUARDS,ETC                   33          8         2            6

  FOOD SERVICE WKRS             77         24        11           13

   BARTENDERS                    5          1         0            1

   COOKS,EXC PVT HH             29         10         5            5

   COUNTER & FOUNTAIN           13          5         3            2

   WAITERS & WAITRESSES         29          8         3            5

  OTHER SERVICE WKRS           188         70        37           33

   ATTENDNTS,HOSP,ETC           41         21        13            8

   CHARWOMEN & CLEANERS         10          4         2            2

   JANITORS & SEXTONS           41         13         6            7

   NURSES,PRACTICAL             16         11         7            4

   OTHER SERVICE,NEC            79         21        10           11

 LABORERS,EXC FARM,MN          296         20         0           21
```

Figure 79: Sample Output Page of KMUST10

Chapter 5

PLACEMENT MODULE

INTRODUCTION

The 1963 Vocational Education Act and its 1968 Amendments clearly state that the major purpose of vocational and technical education is the preparation of students for entry level employment. The most objective measure of achievement relative to this goal is the ability of graduates to obtain employment (placement) in the field for which they were trained. Recognizing this fact, the Kansas State Department of Education has established minimum placement rates for vocational and technical programs. Secondary programs must place at least 50 percent of their graduates while post-secondary programs must place at least 75 percent.

When it became apparent that this policy would affect the funding of local programs, local administrators asked the K-MUST Project staff to develop a system that would aide them in finding related employment for their graduates. The module documented in this chapter is the system which was developed for this purpose.

GENERAL MODULE DESCRIPTION

One of the major inputs to the Demand Module (See Chapter 4) is Dun and Bradstreet Market Identifiers (R). This input is expressed in terms of name of business, address, size (by number of employees) and principal product or service. Since the problem of placement is often largely a problem of communication between the schools (or students) and potential employers, it was decided that this available data source (Dun and Bradstreet data) would be utilized to facilitate better communication. Schools would receive lists of potential employers while potential employers would receive lists of vocational and technical programs across the state. Schools would then be able to contact employers and employers would be able to contact schools as the need occurred.

In the fall months, a gum label listing of the 500 largest firms in Kansas is generated from the Dun and Bradstreet Market Identifiers (R) and a list of vocational and technical programs expected to output students is prepared. (Note: The list of vocational and technical programs includes (1) type of program, (2) location of program, and (3) level of program, i.e., secondary or post-secondary). Using the gum label mailing list, employers are mailed the list of vocational and technical programs. A "we are interested in serving you" cover letter is included in the mailing. See Figure 80 for an example cover letter. See Figure 81 for an example page of the vocational and technical education program list.

In the early spring, vocational program administrators are mailed a list of the 500 largest employers in Kansas and all employers in their immediate area (County). These firms are identified by major product or service. The administrator can contact appropriate firms at his convenience about possible placement of graduates. See Figure 82 for an example of the firm listings generated from Dun and Bradstreet data.

Also in the spring, the 500 largest employers are again contacted. This time, they receive the list of vocational programs with estimates of the number of graduates available for employment and the names and phone numbers of the instructors. A "Hi, remember us, we are interested in you" cover letter is included in the mailing. Employers who are hiring can contact the appropriate instructors at their convenience. Figure 83 is an action chart for this module.

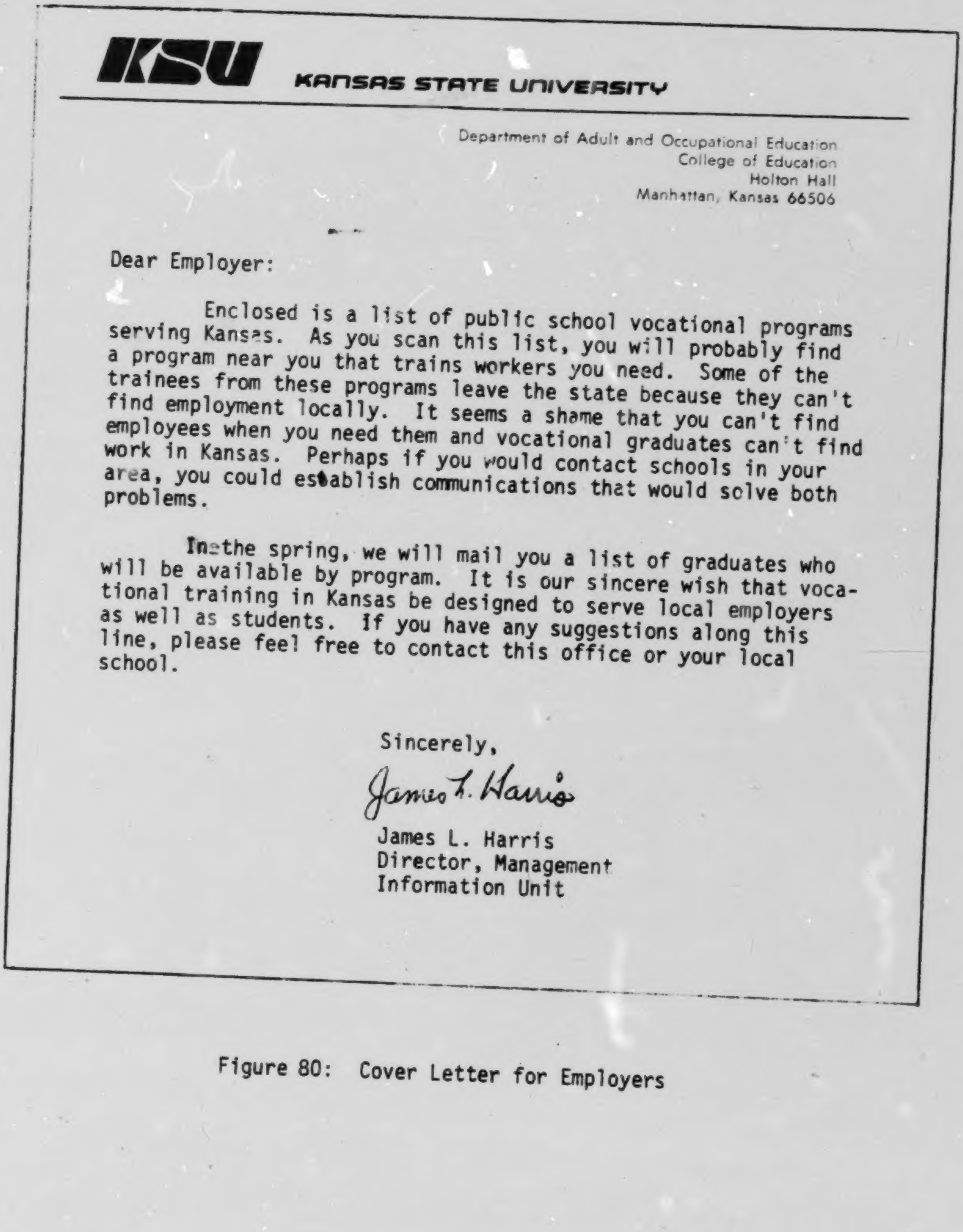
DATA COLLECTION

Lists of Employers (Including Gum Label Lists)

This information is obtained from the Dun and Bradstreet Market Identifiers(R).

Lists of Vocational Programs

This data is obtained from the Student Accounting System (See Chapter 2).



KSU KANSAS STATE UNIVERSITY

Department of Adult and Occupational Education
College of Education
Holton Hall
Manhattan, Kansas 66506

Dear Employer:

Enclosed is a list of public school vocational programs serving Kansas. As you scan this list, you will probably find a program near you that trains workers you need. Some of the trainees from these programs leave the state because they can't find employment locally. It seems a shame that you can't find employees when you need them and vocational graduates can't find work in Kansas. Perhaps if you would contact schools in your area, you could establish communications that would solve both problems.

In the spring, we will mail you a list of graduates who will be available by program. It is our sincere wish that vocational training in Kansas be designed to serve local employers as well as students. If you have any suggestions along this line, please feel free to contact this office or your local school.

Sincerely,

James L. Harris

James L. Harris
Director, Management
Information Unit

Figure 80: Cover Letter for Employers

Automobile Body and Fender Mechanics Programs (Continued)

Southeast Kansas Area Vocational-Technical School (PSec)
6th and Roosevelt
Coffeyville, Kansas
(316) 227-8932

Southwest Kansas Area Vocational-Technical School (Sec - PSec)
1000 Second Ave
Dodge City, Kansas
(316) 251-5510

Wichita Area Vocational-Technical School (Sec - PSec)
310 South Grove
Wichita, Kansas
(316) AM5-0771

Automobile Mechanic Programs

Altamont High School (Sec)
1136 S Jackson
Altamont, Kansas
(316) 444-6723

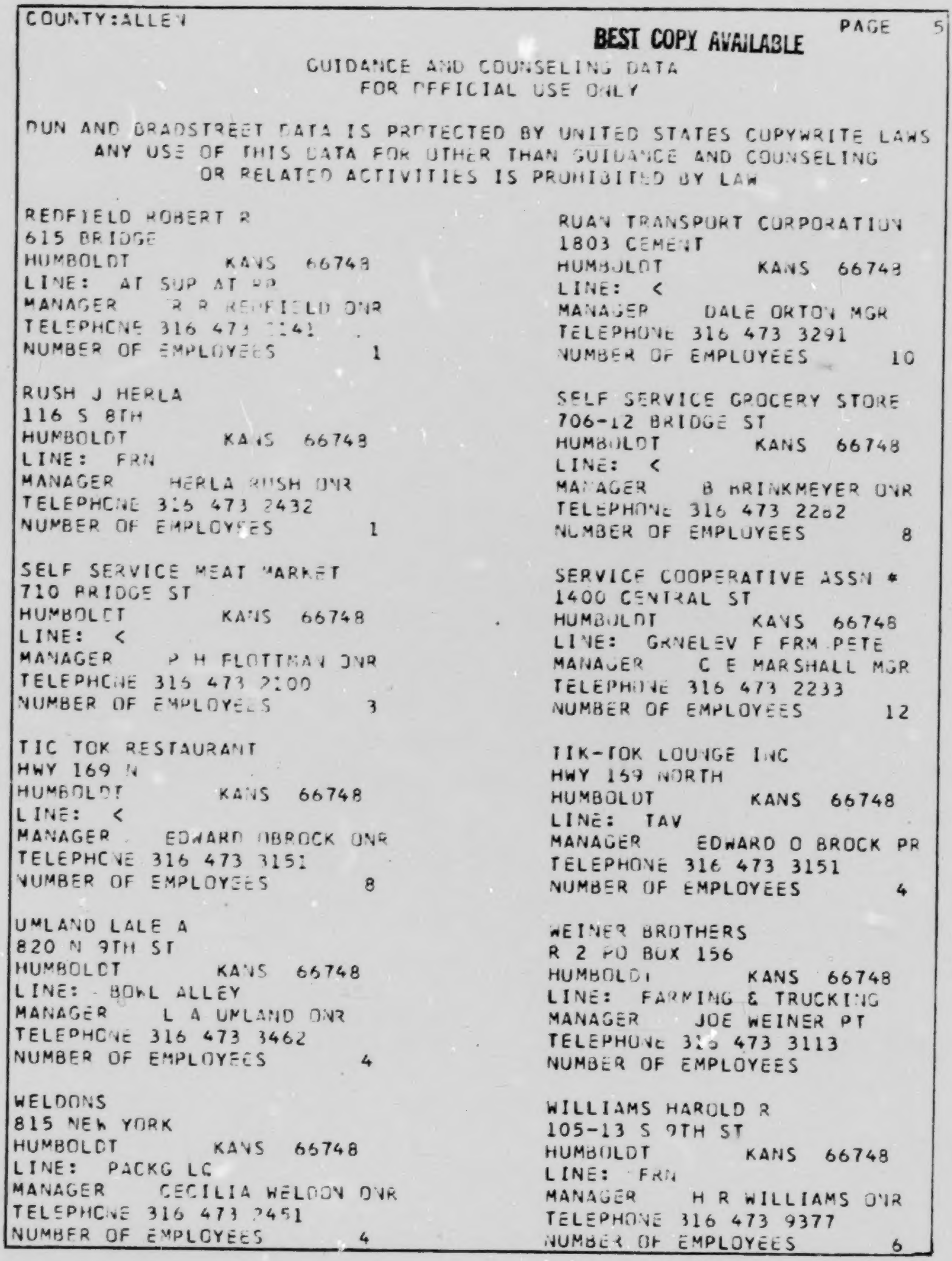
Central Kansas Area Vocational-Technical School (Sec - PSec)
218 E. 7th Street
Newton, Kansas
(316) 283-0930

Barton County Community College (PSec)
11134 Arrowhead Rd
Great Bend, Kansas
(316) 443-2543

Cowley County Community College (PSec)
125 South Second Street
Arkansas City, Kansas
(316) 342-6404

Kansas City Area Vocational-Technical School (Sec - PSec)
2220 N. 59th Street
Kansas City, Kansas
(913) 334-2720

Figure 81 : Example Page from Listing of Vocational and Technical Programs.



```
COUNTY:ALLEN                                                    PAGE     5

                        GUIDANCE AND COUNSELING DATA
                            FOR OFFICIAL USE ONLY

DUN AND BRADSTREET DATA IS PROTECTED BY UNITED STATES CUPYWRITE LAWS
     ANY USE OF THIS DATA FOR OTHER THAN GUIDANCE AND COUNSELING
              OR RELATED ACTIVITIES IS PROHIBITED BY LAW

REDFIELD ROBERT R                        RUAN TRANSPORT CORPORATION
615 BRIDGE                               1803 CEMENT
HUMBOLDT          KANS  66748            HUMBOLDT          KANS  66748
LINE:  AT SUP AT RP                      LINE:  <
MANAGER     R R REDFIELD ONR             MANAGER     DALE ORTON MGR
TELEPHONE 316 473 2141                   TELEPHONE 316 473 3291
NUMBER OF EMPLOYEES          1           NUMBER OF EMPLOYEES         10

RUSH J HERLA                             SELF SERVICE GROCERY STORE
116 S 8TH                                706-12 BRIDGE ST
HUMBOLDT          KANS  66748            HUMBOLDT          KANS  66748
LINE:  FRN                               LINE:  <
MANAGER     HERLA RUSH ONR               MANAGER     B BRINKMEYER ONR
TELEPHONE 316 473 2432                   TELEPHONE 316 473 2262
NUMBER OF EMPLOYEES          1           NUMBER OF EMPLOYEES          8

SELF SERVICE MEAT MARKET                 SERVICE COOPERATIVE ASSN *
710 BRIDGE ST                            1400 CENTRAL ST
HUMBOLDT          KANS  66748            HUMBOLDT          KANS  66748
LINE:  <                                 LINE:  GRNELEV F FRM PETE
MANAGER     P H FLOTTMAN ONR             MANAGER     C E MARSHALL MGR
TELEPHONE 316 473 2100                   TELEPHONE 316 473 2233
NUMBER OF EMPLOYEES          3           NUMBER OF EMPLOYEES         12

TIC TOK RESTAURANT                       TIK-TOK LOUNGE INC
HWY 169 N                                HWY 169 NORTH
HUMBOLDT          KANS  66748            HUMBOLDT          KANS  66748
LINE:  <                                 LINE:  TAV
MANAGER     EDWARD OBROCK ONR            MANAGER     EDWARD O BROCK PR
TELEPHONE 316 473 3151                   TELEPHONE 316 473 3151
NUMBER OF EMPLOYEES          8           NUMBER OF EMPLOYEES          4

UMLAND LALE A                            WEINER BROTHERS
820 N 9TH ST                             R 2 PO BOX 156
HUMBOLDT          KANS  66748            HUMBOLDT          KANS  66748
LINE:  BOWL ALLEY                        LINE:  FARMING & TRUCKING
MANAGER     L A UMLAND ONR               MANAGER     JOE WEINER PT
TELEPHONE 316 473 3462                   TELEPHONE 316 473 3113
NUMBER OF EMPLOYEES          4           NUMBER OF EMPLOYEES

WELDONS                                  WILLIAMS HAROLD R
815 NEW YORK                             105-13 S 9TH ST
HUMBOLDT          KANS  66748            HUMBOLDT          KANS  66748
LINE:  PACKG LC                          LINE:  FRN
MANAGER     CECILIA WELDON ONR           MANAGER     H R WILLIAMS ONR
TELEPHONE 316 473 2451                   TELEPHONE 316 473 9377
NUMBER OF EMPLOYEES          4           NUMBER OF EMPLOYEES          6
```

Figure 82: Sample Page of Employer Listing

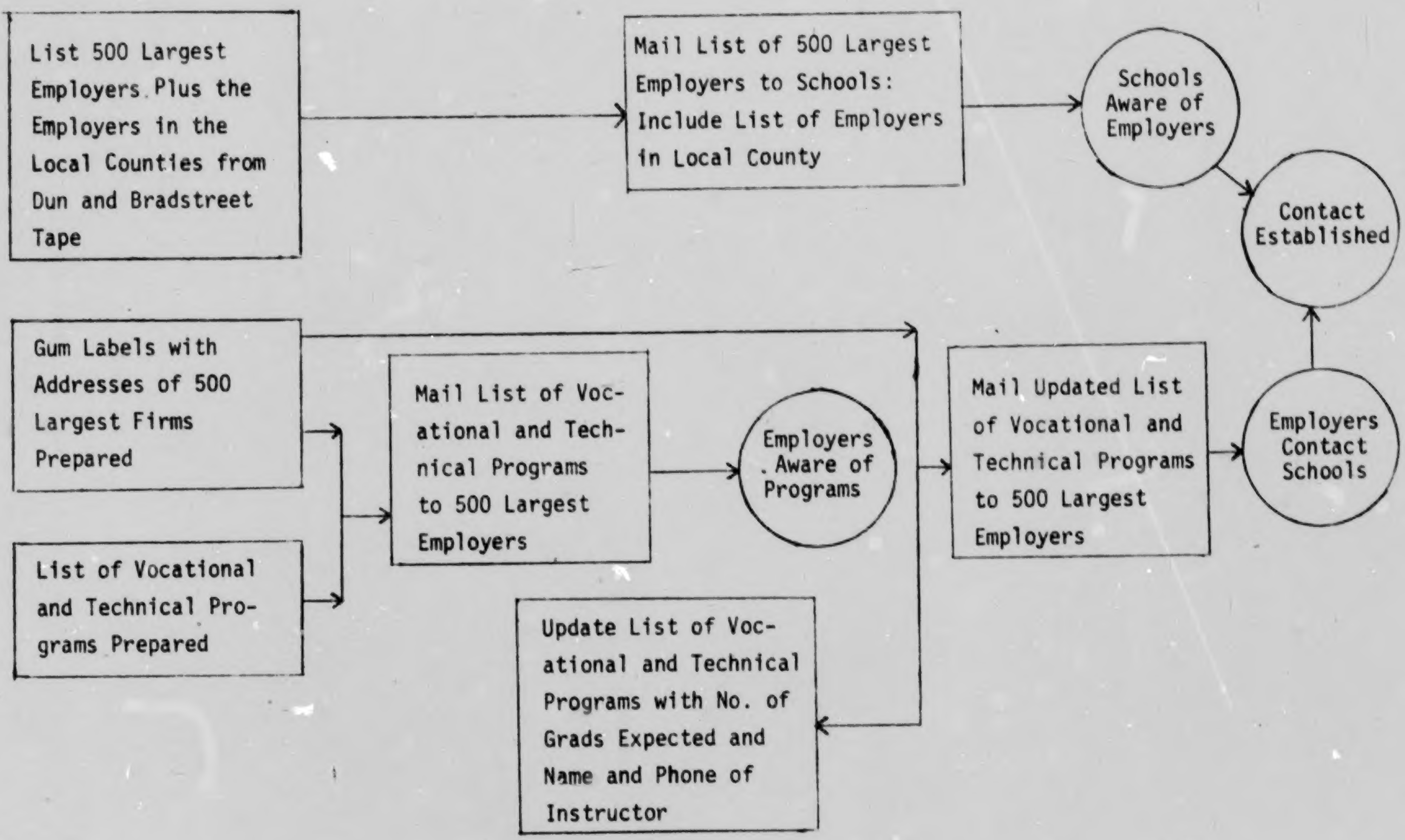

List 500 Largest Employers. Plus the Employers in the Local Counties from Dun and Bradstreet Tape
Mail List of 500 Largest Employers to Schools: Include List of Employers in Local County
Schools Aware of Employers
Contact Established
Gum Labels with Addresses of 500 Largest Firms Prepared
List of Vocational and Technical Programs Prepared
Mail List of Vocational and Technical Programs to 500 Largest Employers
Employers Aware of Programs
Update List of Vocational and Technical Programs with No. of Grads Expected and Name and Phone of Instructor
Mail Updated List of Vocational and Technical Programs to 500 Largest Employers
Employers Contact Schools

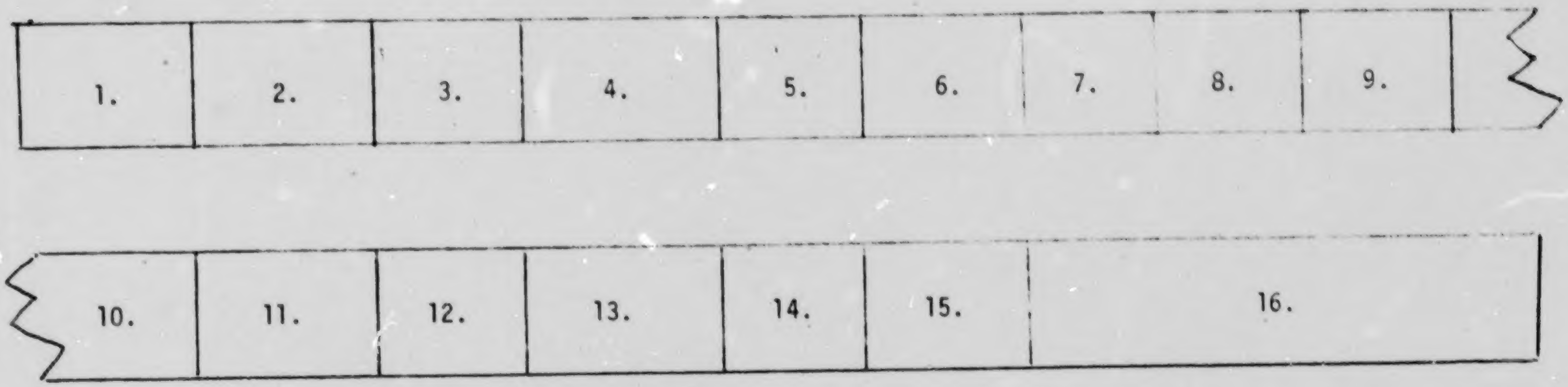
Figure 83: Action Chart for Placement Module.

DATA PREPARATION

There are three types of data input for this module, i.e., data on the vocational programs, information about particular firms and a matching of Dun and Bradstreet county codes with county names. The latter is a housekeeping input for the computer software. The vocational program input is output from the Student Accounting System Module (see Chapter 2) and is prepared by hand for mailing to employers. The firm data input is the Dun and Bradstreet Market Identifier (R) tape and is formated as shown in Figure 84. The county codes data is a card file which contains a county code and corresponding county name on each card. The county codes are Dun and Bradstreet Codes. Figure 85 shows the layout of a card record in this file.

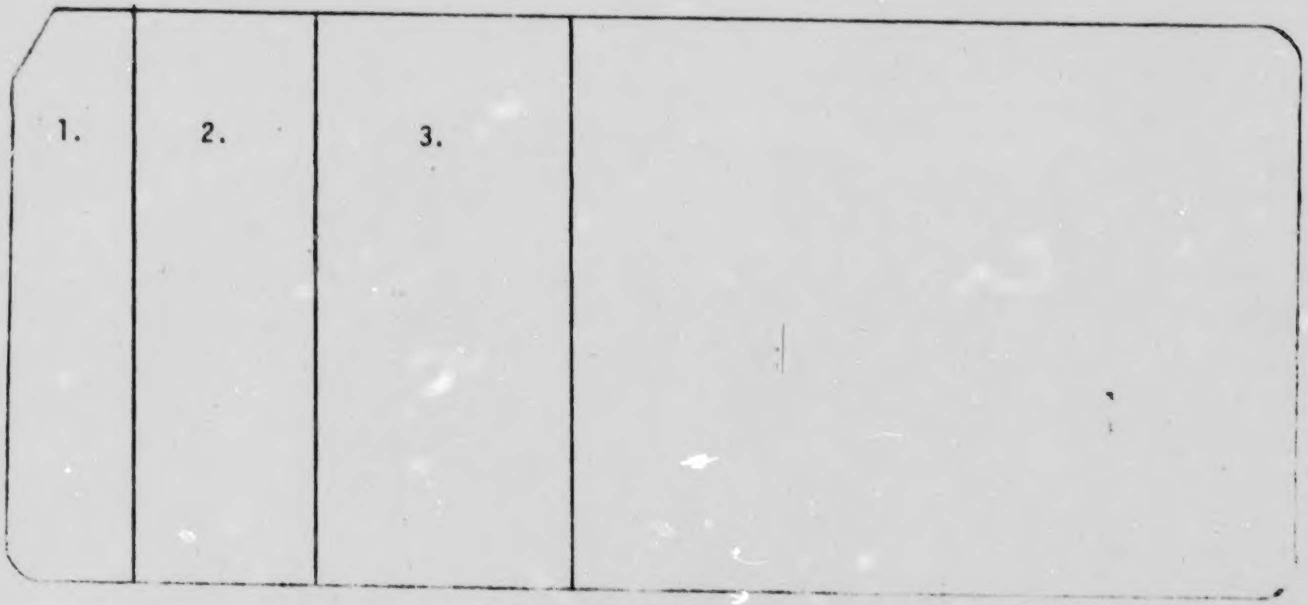
DATA PROCESSING

A computer program called "KMUST3" written in Standard American COBOL for an IBM 360 H50 is used to generate the firm listings. Figure 86 is a flow chart of the program, Figure 87 is a program listing and Figure 88 is the JCL setup for "KMUST3".



1.	C	1-12	Filler
2.	C	13-15	County Code
3.	C	16-22	Filler
4.	C	23-52	Business Name
5.	C	53-77	Street Address
6.	C	78-99	Filler
7.	C	100-112	City Name
8.	C	113-116	State Name
9.	C	117	Filler
10.	C	118-122	Zip Code
11.	C	123-132	Telephone No.
12.	C	133-151	Principal Officer
13.	C	152-170	Line of Business
14.	C	171-190	Filler
15.	C	191-195	Employment Data
16.	C	196-350	Filler

Figure 84 : Tape Input Layout for KMUST3



1. CC 1-2 Blank
2. CC 3-5 Dun and Bradstreet County Code
3. CC 6-25 County Name

Figure 85 : Card Input for KMUST3

1. Open Files
2. Move Spaces to Output Area
3. Perform 4 for I = 1, 2
4. Move Data Item Headings to Output Area I (Note: I = 1, 2 refers to left and right sides of the page)
5. Read in County Code-Name File
6. Move 1 to J; 2 to I
7. Add 1 to Page Count; Write Page Headings; Add 11 to Line Count
8. Read BLS Firm Record into Hold Area 1
9. Read BLS Firm Record into Hold Area 2
10. Is County Code in Hold Area 1 Greater Than County Code in Hold Area 2
11. Move 2 to K; 1 to I
12. Is County Code in Hold Area 2 Greater Than County Code in Hold Area 1
13. Move 1 to K; 1 to I
14. Is County Code in Hold Area 1 Greater Than County Code in County Name-Code File Record J
15. Add 1 to J; Move 0 to Line Count and Page Count
16. Perform 17,for K = 1, 2
17. Move Data in Hold Area K to Output Area K (Again, K = 1, 2 refers to left and right sides of the Page)
18. Is Line Count Greater Than 55
19. Perform 7 Above
20. Write Data and Add 8 to Line Count
21. Move Spaces to Data Item Headings in Output Area 2 (Right Side of Page)

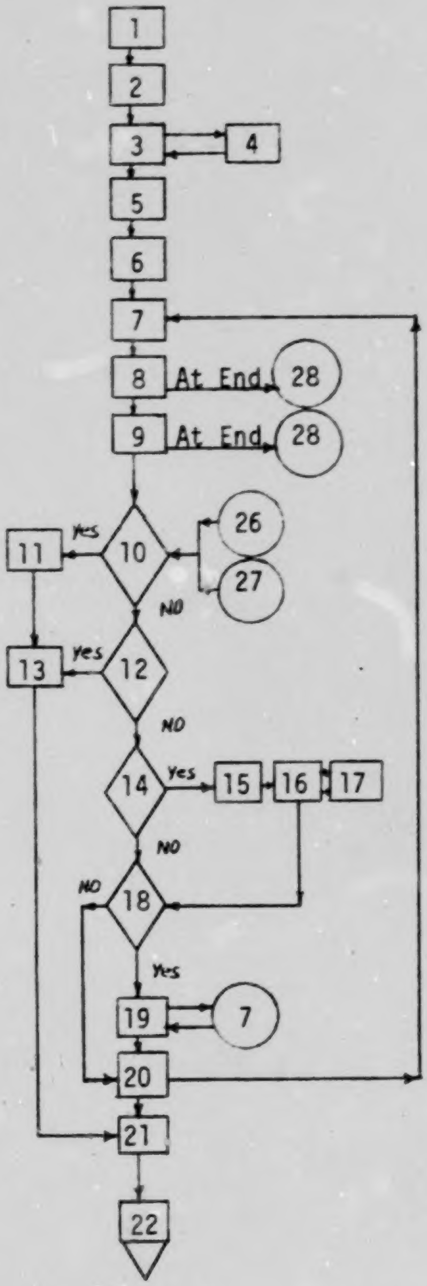


Figure 86: Flow Chart for KMUST03 (Used to list firms from D and B Tape)

22. Perform 17 for I = 1
23. Add 1 to J
24. Is K = 1
25. Perform 8
26. Is K = 2
27. Perform 9
28. Close Files; Stop Run

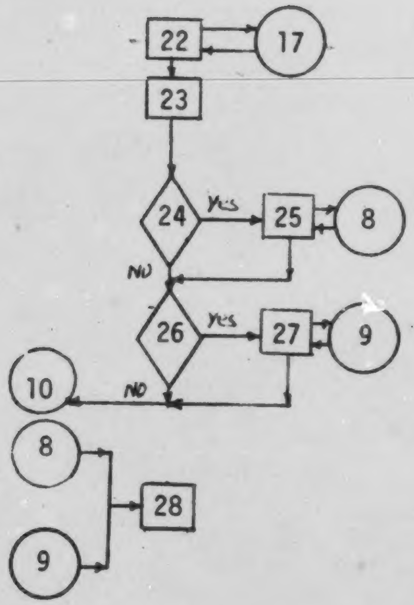


Figure 86: (Cont.)

```
IDENTIFICATION DIVISION.
PROGRAM-ID. 'KMUST3'.
AUTHOR. DONALDSON WOODS.
INSTALLATION. KANSAS STATE UNIVERSITY.
DATE-WRITTEN. 12/30/71.
DATE-COMPILED.
SECURITY. KMUST-JAMES HARRIS, DIRECTOR.
REMARKS. KMUST3 LISTS DUN AND BRADSTREET DATA FROM TAPE9 969101
    (,SL)-DSN IS COPYRT.DBSORT1971.THIS DATA SET IS SORTED BY
    FIRM WITHIN CITY WITHIN COUNTY.
ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER. IBM-360 H50.
OBJECT-COMPUTER. IBM-360 H50.
INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT PRINT-FILE ASSIGN TO 'OUTPUT1' UTILITY RESERVE 2.
    SELECT TAPE-FILE ASSIGN TO 'TAPE9' UTILITY RESERVE 4.
    SELECT CNTY-FILE ASSIGN TO 'CNTY1' UTILITY RESERVE 2.
DATA DIVISION.
FILE SECTION.
FD  TAPE-FILE DATA RECORD IS TAPE-REC RECORDING MODE IS F
    LABEL RECORDS ARE STANDARD BLOCK CONTAINS 10 RECORDS.
01  TAPE-REC                PICTURE X(350).
FD  CNTY-FILE DATA RECORD IS CNTY-REC RECORDING MODE IS F
    LABEL RECORDS ARE STANDARD BLOCK CONTAINS 90 RECORDS.
01  CNTY-REC                PICTURE X(80).
FD  PRINT-FILE DATA RECORD IS PRINT-LINE RECORDING MODE IS F
    LABEL RECORDS ARE OMITTED BLOCK CONTAINS 100 RECORDS.
01  PRINT-LINE.
     03 FLD1                    PICTURE X.
     03 FLD2                    PICTURE X(80).
WORKING-STORAGE SECTION.
77   PAGECNT                    PICTURE 999 VALUE 0.
77   LINECNT                    PICTURE 99 VALUE 0.
77   I                          PICTURE 9.
77   J                          PICTURE S999 COMPUTATIONAL
      VALUE 1.
77   K                          PICTURE 9 VALUE 0.
77   L                          PICTURE 9 VALUE 0.
01   PRINT-FMT1.
     03 FILLER              PICTURE X(12) VALUE '     COUNTY:'.
     03 CO-NAME             PICTURE X(20).
     03 FILLER              PICTURE X(34) VALUE SPACES.
     03 FILLER              PICTURE X(5) VALUE 'PAGE '.
```

Figure 87: Source Listing of KMUST03

```
       03 PAGE-NUM                PICTURE ZZ9.
       03 FILLER                  PICTURE X(6) VALUE SPACES.
   01  PRINT-FMT2.
       03 FILLER                  PICTURE X(26) VALUE SPACES.
       03 FILLER                  PICTURE X(54) VALUE 'GUIDANCE AND COU
       'NSELING DATA'.
   01  PRINT-FMT3.
       03 FILLER                  PICTURE X(30) VALUE SPACES.
       03 FILLER                  PICTURE X(50) VALUE 'FOR OFFICIAL USE
       ' ONLY'.
   01  PRINT-FMT4.
       03 FILLER                  PICTURE X(5) VALUE SPACES.
       03 FILLER                  PICTURE X(75) VALUE 'DUN AND BRADSTRE
       'ET DATA IS PROTECTED BY UNITED STATES COPYWRITE LAWS'.
   01  PRINT-FMT5.
       03 FILLER                  PICTURE X(10) VALUE SPACES.
       03 FILLER                  PICTURE X(70) VALUE 'ANY USE OF THIS
       'DATA FOR OTHER THAN GUIDANCE AND COUNSELING'.
   01  PRINT-FMT6.
       03 FILLER                  PICTURE X(18) VALUE SPACES.
       03 FILLER                  PICTURE X(62) VALUE 'OR RELATED ACTIV
       'ITIES IS PROHIBITED BY LAW'.
   01  PRINT-FMT7.
       03 PF7 OCCURS 2 TIMES.
         05 FILLER                PICTURE X(5).
         05 FIRM1                 PICTURE X(30).
         05 FILLER                PICTURE X(5).
   01  PRINT-FMT8.
       03 PF8 OCCURS 2 TIMES.
         05 FILLER                PICTURE X(5).
         05 STREET1               PICTURE X(25).
         05 FILLER                PICTURE X(10).
   01  PRINT-FMT9.
       03 PF9 OCCURS 2 TIMES.
         05 FILLER                PICTURE X(5).
         05 CITY1                 PICTURE X(13).
         05 FILLER                PICTURE XX.
         05 STATE1                PICTURE X(4).
         05 FILLER                PICTURE XX.
         05 ZIP1                  PICTURE X(5).
         05 FILLER                PICTURE X(9).
   01  PRINT-FMT10.
       03 PF10 OCCURS 2 TIMES.
         05 FILLER                PICTURE X(5).
         05 F6                    PICTURE X(7).
         05 FIRMLINE1             PICTURE X(19).
         05 FILLER                PICTURE X(9).
```

Figure 87: Source Listing of KMUST03 (Cont)

```
01  PRINT-FMT11.
    03 PF11 OCCURS 2 TIMES.
       05 FILLER                      PICTURE X(5).
       05 F1                          PICTURE X(11).
       05 MANAGER1                    PICTURE X(19).
       05 FILLER                      PICTURE X(5).
01  PRINT-FMT12.
    03 PF12 OCCURS 2 TIMES.
       05 FILLER                      PICTURE X(5).
       05 F2                          PICTURE X(10).
       05 TCODE1                      PICTURE XXX.
       05 FILLER                      PICTURE X.
       05 TCODE2                      PICTURE XXX.
       05 FILLER                      PICTURE X.
       05 TCODE3                      PICTURE X(4).
       05 FILLER                      PICTURE X(13).
01  PRINT-FMT13.
    03 PF13 OCCURS 2 TIMES.
       05 F3                          PICTURE X(5).
       05 F4                          PICTURE X(20).
       05 EMPLOYEES1                  PICTURE ZZZ,ZZZ.
       05 F5                          PICTURE X(8).
01  COUNTY-ARRAY.
    03 CNTY-ARRAY OCCURS 200 TIMES.
       05 STATE-CODE                  PICTURE X(2).
       05 CNTY-CODE                   PICTURE X(3).
       05 CNTY-NAME                   PICTURE X(20).
01  DNB-RECORD.
    03 DNB-ARRAY OCCURS 2 TIMES.
       05 FILLER                      PICTURE X(12).
       05 COUNTY-CODE                 PICTURE X(3).
       05 FILLER                      PICTURE X(7).
       05 BUSINESS-NAME               PICTURE X(30).
       05 STREET-ADDRESS              PICTURE X(25).
       05 FILLER                      PICTURE X(22).
       05 CITY-NAME                   PICTURE X(13).
       05 STATE-NAME                  PICTURE X(4).
       05 FILLER                      PICTURE X.
       05 ZIP-CODE                    PICTURE X(5).
       05 TELEPHONE-NUM.
          07 TEL1                     PICTURE X(3).
          07 TEL2                     PICTURE X(3).
          07 TEL3                     PICTURE X(4).
       05 PRIN-OFFICER                PICTURE X(19).
       05 LINE-OF-BUSINESS            PICTURE X(19).
       05 FILLER                      PICTURE X(20).
```

Figure 87: Source Listing of KMUST03 (cont)

```
     05 EMPLOYEES-HERE.
         07 MULT-FACTOR          PICTURE 9.
         07 EMPL-NUMBER          PICTURE 999.
         07 EMPL-CODE            PICTURE 9.
 PROCEDURE DIVISION.
     OPEN INPUT CNTY-FILE TAPE-FILE OUTPUT PRINT-FILE.
     MOVE SPACES TO PRINT-FMT7 PRINT-FMT8 PRINT-FMT9 PRINT-FMT10
     PRINT-FMT11 PRINT-FMT12.
     PERFORM PAR-W VARYING I FROM 1 BY 1 UNTIL I = 2.
 PAR-W. MOVE 'MANAGER' TO F1 (I).
     MOVE 'TELEPHONE' TO F2 (I).
     MOVE SPACES TO F3 (I).
     MOVE 'NUMBER OF EMPLOYEES' TO F4 (I).
     MOVE SPACES TO F5 (I).
     MOVE 'LINE:' TO F6 (I).
 PAR-1. READ CNTY-FILE INTO CNTY-ARRAY (J) AT END GO TO PAR-2.
     ADD 1 TO J.
     GO TO PAR-1.
 PAR-2. MOVE 1 TO J.
     MOVE 2 TO I.
 PAR-3. MOVE CNTY-NAME (J) TO CO-NAME.
 XX. ADD 1 TO PAGECNT.
     MOVE PAGECNT TO PAGE-NUM.
     MOVE PRINT-FMT1 TO FLD2. WRITE PRINT-LINE AFTER 0.
     MOVE PRINT-FMT2 TO FLD2. WRITE PRINT-LINE AFTER 2.
     MOVE PRINT-FMT3 TO FLD2. WRITE PRINT-LINE AFTER 1.
     MOVE PRINT-FMT4 TO FLD2. WRITE PRINT-LINE AFTER 2.
     MOVE PRINT-FMT5 TO FLD2. WRITE PRINT-LINE AFTER 1.
     MOVE PRINT-FMT6 TO FLD2. WRITE PRINT-LINE AFTER 1.
     ADD 11 TO LINECNT.
 PAR-4. READ TAPE-FILE INTO DNB-ARRAY (1) AT END GO TO PAR-12.
 PAR-5. READ TAPE-FILE INTO DNB-ARRAY (2) AT END GO TO PAR-12.
 PAR-6. IF COUNTY-CODE (1) > COUNTY-CODE (2) MOVE 2 TO K
     MOVE 1 TO L GO TO PAR-11.
     IF COUNTY-CODE (2) > COUNTY-CODE (1) MOVE 1 TO K
     MOVE 1 TO L GO TO PAR-11.
     IF COUNTY-CODE (1) > CNTY-CODE (J) ADD 1 TO J
     MOVE 0 TO LINECNT PAGECNT PERFORM PAR-3 THRU XX.
     PERFORM PAR-7 THRU PAR-8 VARYING K FROM 1 BY 1 UNTIL K = 2.
 PAR-7. MOVE K TO L.
 PAR-8. MOVE BUSINESS-NAME (K) TO FIRM1 (L).
     MOVE STREET-ADDRESS (K) TO STREET1 (L).
     MOVE CITY-NAME (K) TO CITY1 (L).
     MOVE STATE-NAME (K) TO STATE1 (L).
     MOVE ZIP-CODE (K) TO ZIP1 (L).
     MOVE LINE-OF-BUSINESS (K) TO FIRMLINE1 (L).
     MOVE PRIN-OFFICER (K) TO MANAGER1 (L).
     MOVE TEL1 (K) TO TCODE1 (L).
     MOVE TEL2 (K) TO TCODE2 (L).
```

Figure 87: Source Listing of KMUST03 (cont)

```
     MOVE TEL3 (K) TO TCODE3 (L).
     IF EMPL-CODE (K) = 2 MOVE 0 TO EMPLOYEES1 (L) GO TO PAR-8.
     IF MULT-FACTOR (K) > 0 COMPUTE EMPLOYEES1 (L) =
      EMPL-NUMBER (K) * 10 ** MULT-FACTOR (K) GO TO PAR-8.
     MOVE EMPL-NUMBER (K) TO EMPLOYEES1 (L).
 PAR-8. EXIT.
 PAR-9. IF LINECNT > 55 MOVE 0 TO LINECNT PERFORM XX.
     MOVE PRINT-FMT7 TO FLD2. WRITE PRINT-LINE AFTER 2.
     MOVE PRINT-FMT8 TO FLD2. WRITE PRINT-LINE AFTER 1.
     MOVE PRINT-FMT9 TO FLD2. WRITE PRINT-LINE AFTER 1.
     MOVE PRINT-FMT10 TO FLD2. WRITE PRINT-LINE AFTER 1.
     MOVE PRINT-FMT11 TO FLD2. WRITE PRINT-LINE AFTER 1.
     MOVE PRINT-FMT12 TO FLD2. WRITE PRINT-LINE AFTER 1.
     MOVE PRINT-FMT13 TO FLD2. WRITE PRINT-LINE AFTER 1.
     ADD 8 TO LINECNT.
 PAR-10. GO TO PAR-4.
 PAR-11. MOVE 0 TO EMPLOYEES1 (2).
     MOVE SPACES TO FIRM1 (2) STREET1 (2) CITY1 (2) STATE1 (2)
     ZIP1 (2) FIRMLINE1 (2) MANAGER1 (2) TCODE1 (2) TCODE2 (2)
     TCODE3 (2) F1 (2) F2 (2) F4 (2) F6 (2).
     PERFORM PAR-X THRU PAR-9.
     PERFORM PAR-W.
     ADD 1 TO J.
     MOVE 0 TO PAGECNT LINECNT.
     PERFORM PAR-3 THRU XX.
     IF K = 1 PERFORM PAR-4.
     IF K = 2 PERFORM PAR-5.
     GO TO PAR-6.
 PAR-12. CLOSE TAPE-FILE CNTY-FILE PRINT-FILE.
     STOP RUN.
```

Figure 87: Source Listing of KMUST03 (Cont)

BEST COPY AVAILABLE

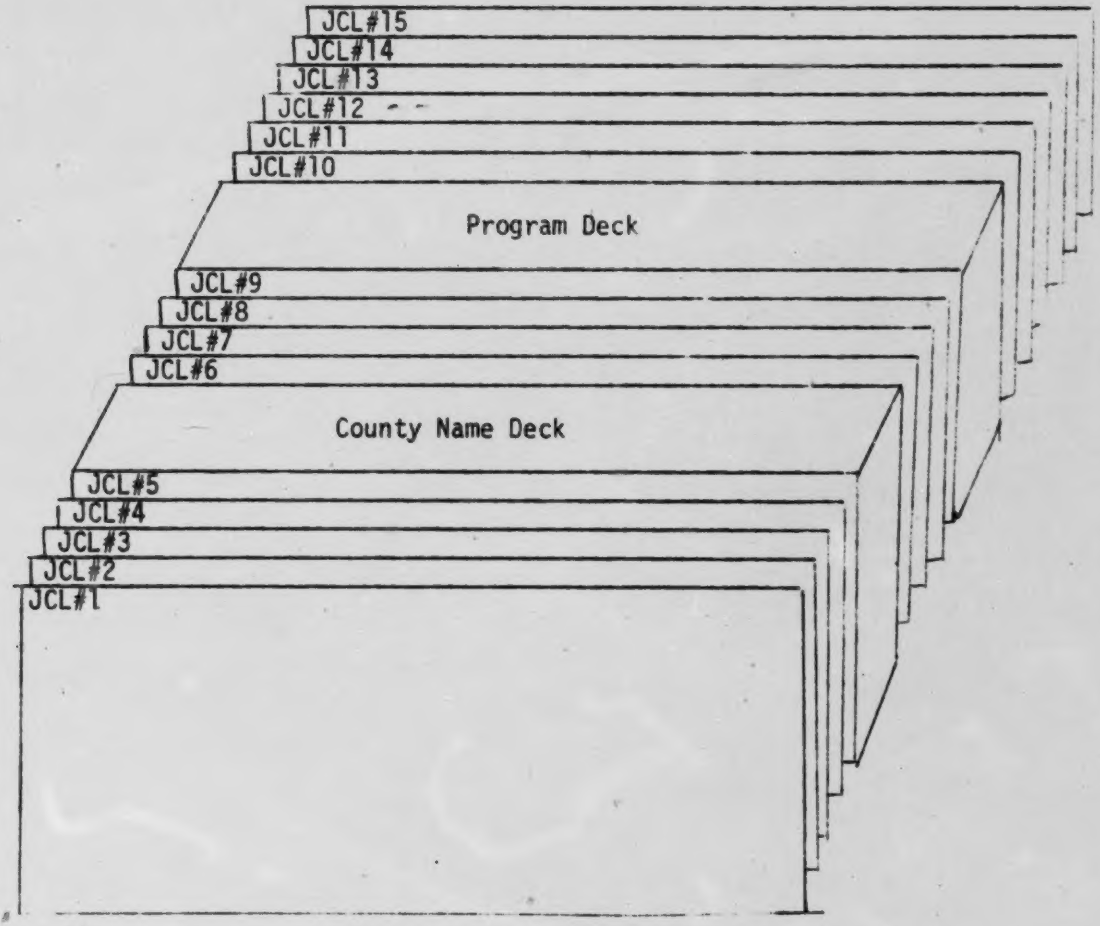


Figure 88: JCL Setup for KMUST3

```
JCL#1 = JOBCARD
JCL#2 = //STEP1 EXEC SUPRSORT
JCL#3 = //SORT1.SORTOUT DD DSN=&&CNTY,UNIT=SYSDA,DISP=(,PASS),
JCL#4 = // SPACE=(TRK,(1,1),DCB=(RECFM=FB,LRECL=80,BLKSIZE=7200)
JCL#5 = //SORT1.SORTIN DD *
JCL#6 = //SORT1.SYSIN DD *
JCL#7 =     SORT FIELDS=(3,3,A),FORMAT=CH
JCL#8 = //STEP2 EXEC COBFCLG
JCL#9 = COB.SYSIN DD *
JCL#10 = //GO.TAPE9 DD DSN=COPYRT.DBSORT1,UNIT=TAPE9,VOL=SER=909101,
JCL#11 = // DISP=(OLD,KEEP),LABEL=(,SL)
JCL#12 = //GO.CNTY1 DD DSN=&&CNTY,UNIT=SYSDA,DISP=(OLD,DELETE)
JCL#13 = //GO.OUTPUT1 DD SYSOUT=A,DCB=(RECFM=FBA,LRECL=81,BLKSIZE=8100)
JCL#14 = /*
JCL#15 = Blank Card
```

Figure 88: JCL Setup for KMUST3 (Con)

Chapter 6

UPGRADING TRAINING NEEDS PROJECTION MODULE

BACKGROUND

Most vocational and technical training is directed toward those individuals preparing for an entry level occupation. Perhaps the most seriously neglected area in the field of vocational education is the training of those persons in the labor force who need to improve their present skills in the light of advancing technology and changing economic conditions.

In the fall of 1971, the State Supervisors in the Division of Vocational Education of the Kansas State Department of Education requested that the K-MUST staff investigate the need for upgrading training. This chapter documents the module developed to determine the need for upgrading training of workers in the Kansas labor force.

GENERAL MODULE DESCRIPTION

In alternate summers, approximately 1800 Kansas employers are surveyed to determine their feelings about upgrading training for their employees. This survey uses a simple questionnaire which is mailed with a cover letter and a self-addressed stamped postcard. One follow-up letter containing a second questionnaire is mailed to those employers who have not responded after a two-week period.

The occupations included in this survey are those sub-professional occupations where present employment in Kansas is largest. (Note: Employment by occupation is determined through the Demand Module: Chapter 4). Employers are identified through the use of Dun and Bradstreet Market Identifiers (R). Forty employers are identified for each of 46 occupations.

The questionnaire covers four areas, i.e., needed frequency of upgrading training, length of training needed annually in hours, length of training sessions in hours, and who should be responsible for the training. Figure 89 is a sample questionnaire.

DATA ANALYSIS

Data is reported in five categories, i.e.,

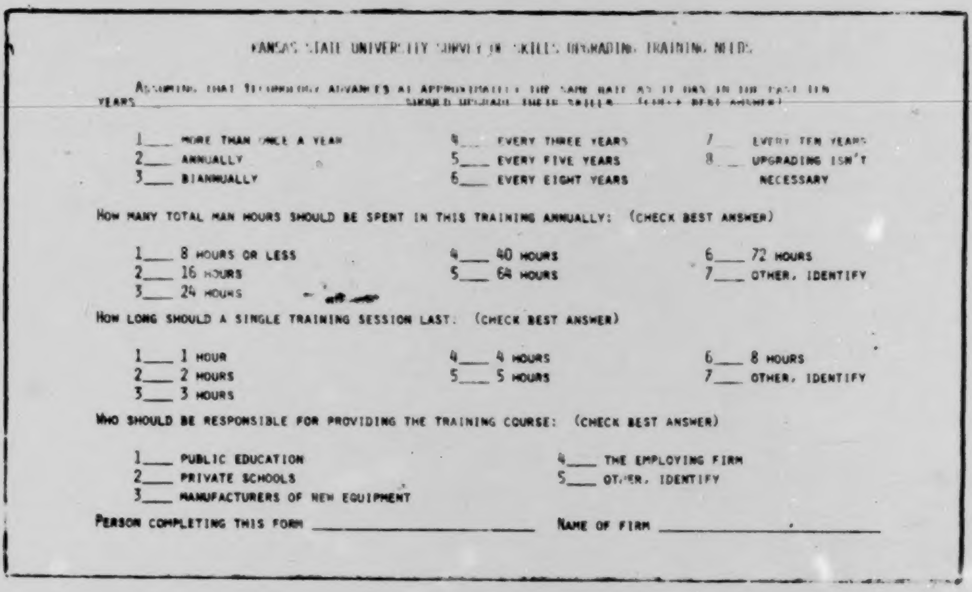
1. total employment in the occupation,
2. annual percent needing skills upgrading by occupation,
3. annual employment (number) needing skills upgrading by occupation,
4. percentage of training to be done by public education by occupation, and
5. annual number of workers needing upgrading training from public training by occupation.

Total employment by occupation is generated by the Demand Module (see Chapter 4). This information is entered in the first data column of the Skills Upgrading Table.

The annual percent of workers in the occupation needing upgrading is determined from question one on the questionnaire. The average response from employers is calculated in terms of years (including fractions thereof) and divided into one. The resulting figure is the percentage entered in the second data column of the Skills Upgrading Table.

The percentage of training needed from public education is determined by figuring the percent of employers who feel that public education should conduct the training. This percentage is entered in data column four of the Skills Upgrading Table.

Annual employment needing upgrading from public education by occupation is calculated by multiplying the annual employment needing upgrading (data column three) times the percentage of training needed from public education (data column four). This figure is entered in the fifth data column of the Skills Upgrading Table. Figure 90 is a sample Skills Upgrading Table.



KANSAS STATE UNIVERSITY SURVEY OF SKILLS UPGRADING TRAINING NEEDS

ASSUMING THAT TECHNOLOGY ADVANCES AT APPROXIMATELY THE SAME RATE AS IT HAS IN THE PAST TEN YEARS ________ SHOULD UPGRADE THEIR SKILLS. (CHECK BEST ANSWER)

1___ MORE THAN ONCE A YEAR
2___ ANNUALLY
3___ BIANNUALLY
4___ EVERY THREE YEARS
5___ EVERY FIVE YEARS
6___ EVERY EIGHT YEARS
7___ EVERY TEN YEARS
8___ UPGRADING ISN'T NECESSARY

HOW MANY TOTAL MAN HOURS SHOULD BE SPENT IN THIS TRAINING ANNUALLY: (CHECK BEST ANSWER)

1___ 8 HOURS OR LESS
2___ 16 HOURS
3___ 24 HOURS
4___ 40 HOURS
5___ 64 HOURS
6___ 72 HOURS
7___ OTHER, IDENTIFY

HOW LONG SHOULD A SINGLE TRAINING SESSION LAST: (CHECK BEST ANSWER)

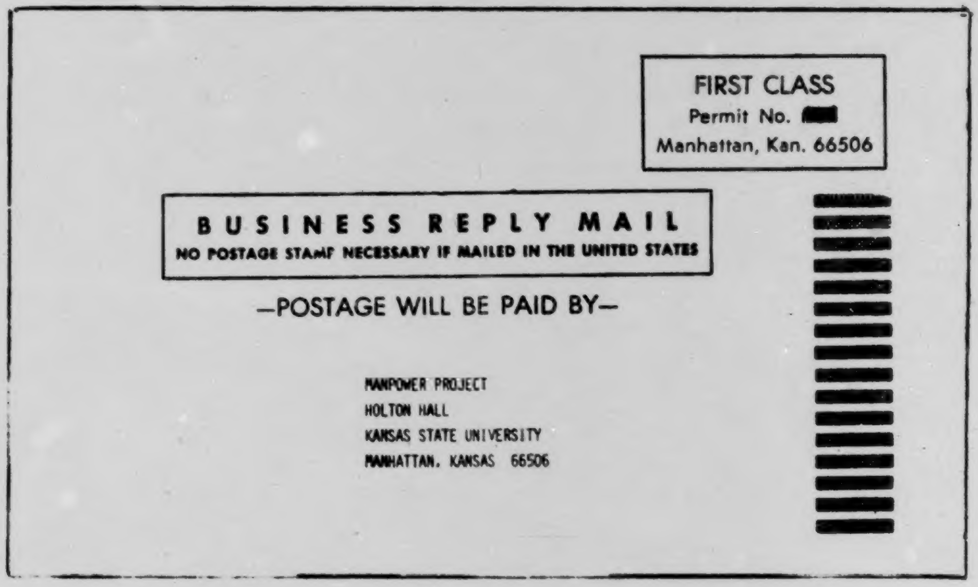
1___ 1 HOUR
2___ 2 HOURS
3___ 3 HOURS
4___ 4 HOURS
5___ 5 HOURS
6___ 8 HOURS
7___ OTHER, IDENTIFY

WHO SHOULD BE RESPONSIBLE FOR PROVIDING THE TRAINING COURSE: (CHECK BEST ANSWER)

1___ PUBLIC EDUCATION
2___ PRIVATE SCHOOLS
3___ MANUFACTURERS OF NEW EQUIPMENT
4___ THE EMPLOYING FIRM
5___ OTHER, IDENTIFY

PERSON COMPLETING THIS FORM ____________ NAME OF FIRM ____________

Back



FIRST CLASS
Permit No. [redacted]
Manhattan, Kan. 66506

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

—POSTAGE WILL BE PAID BY—

MANPOWER PROJECT
HOLTON HALL
KANSAS STATE UNIVERSITY
MANHATTAN, KANSAS 66506

Front

Figure 89: Questionnaire for Skills Upgrading Employer Survey

DEMAND FOR SKILLS UPGRADING IN KANSAS

OCCUPATION	TOTAL EMPLOYMENT	Annual Percent Needing Skills Upgraded	Annual Employment Needing Skills Upgraded	Percentage of Training Assistance Requested from Public Education	Annual Employment Requesting Upgrading Training from Public Education
Accounting Clerks	5,435	.33	1,794	.10	179
Airplane Mechanics	3,306	.67	2,215	.09	199
Assembly Metalworkers	3,142	.64	2,011	.31	623
Attendants, Hospital & Other	13,771	.98	13,496	.21	2,834
Auto Mechanics	10,034	.65	6,522	.10	652
Bakers	1,159	.73	846	.15	127
Bank Tellers	2,040	.80	1,632	.04	65
Bookkeepers, Hand	10,713	.39	4,178	.14	585
Brick Masons	1,654	.60	992	.00	0
Cabinetmakers	616	.68	419	.19	80
Carpenters	10,722	.55	5,897	.11	649
Cashiers	10,584	.65	6,880	.06	413
Cement & Concrete Finishers	700	.48	336	.13	44
Charwomen & Cleaners	2,796	.60	1,678	.08	134
Clerks	140,652	.36	50,635	.18	9,114
Cooks	13,294	.98	13,028	.27	3,518
Draftsmen	2,306	.40	922	.32	295
Electricians	3,868	.63	2,437	.07	171
Excavating, Grading, & Machine Operators	3,949	.43	1,648	.25	412
Firemen	2,001	.95	1,901	.32	608
Janitors & Sextons	13,114	.69	9,049	.13	176
Linemen	5,020	.91	4,568	.00	0
Machinists	4,643	.53	2,461	.33	812
Machine Tool Operators	1,707	.67	1,144	.24	275
Meat Cutters	2,451	.53	1,299	.11	143
Metalworkers, Inspection	1,239	.38	471	.18	85
Nurses, Practical	5,059	.53	2,681	.48	1,287
Nurses, Professional	11,078	.91	10,081	.32	3,226

Figure 90: Sample Skills Upgrading Table

DEMAND FOR SKILLS UPGRADING IN KANSAS

OCCUPATION	TOTAL EMPLOYMENT	Annual Percent Needing Skills Upgraded	Annual Employment Needing Skills Upgraded	Percentage of Training Assistance Requested from Public Education	Annual Employment Requesting Upgrading Training from Public Education
Office Machine Repairmen	542	.75	407	.05	20
Painters	4,368	.62	2,708	.05	135
Photographers	705	.59	417	.00	0
Plumbers & Pipefitters	3,852	.56	2,159	.11	237
Policemen	3,617	1.42*	5,136*	.16	822
Printing Trades Craftsmen	3,985	.77	3,068	.18	552
Radio & TV Repairmen	1,460	1.25*	1,825*	.00	0
Roofer	512	.47	241	.09	22
Sales Workers	70,269	.74	51,999	.03	1,560
Secretaries & Stenos	34,751	.36	12,510	.23	2,877
Security Guards	2,012	1.03*	2,072*	.06	124
Sewers & Stitchers	2,786	.24	669	.00	0
Sheetmetal Workers	4,458	.51	2,274	.22	500
Surveyors	625	.41	256	.20	51
Technicians, Med. & Dental	3,799	.75	2,849	.11	313
Upholsterers	699	.67	448	.15	67
Waiters & Waitresses	15,736	.88	13,848	.18	2,493
Welders & Flame Cutters	7,185	.69	4,958	.22	1,091

* Employers of workers in these occupations feel that skill upgrading is needed more than once a year.

Figure 90: Sample Skills Upgrading Table (Continued)

Chapter 7

COST/BENEFIT MODULE

The 1968 Vocational Education Act Amendments require that vocational and technical education training prepare students for jobs that either exist presently or will exist in the future. Implicit in this legislation is the need for graduates to benefit from their training in terms of better jobs and higher salaries. Also implicit in the law is that society should benefit by receiving trained individuals whose productivity potential has been increased through vocational or technical training.

In the fall of 1971, the Kansas State Department of Education requested that a simple model be developed to determine the payback periods and long run accrued benefits for various vocational and technical programs. Payback periods were defined as that period of time, starting with entry into vocational or technical training, required for the expected increase in productivity of program graduates to offset the estimated foregone productivity and training costs associated with vocational and technical education. Long run accrued benefits refers to that amount of expected productivity over the program graduates' lifetimes which is in excess of the amount they would have been expected to produce without vocational or technical training. In both of the above cases, productivity is measured in terms of expected salary.

Instructions to the K-MUST staff were to develop a Cost/Benefit Module which would not require extensive data preparation, would be easy to understand, and could be easily applied to large numbers of programs. In other words, the module was to be as simple as possible within the scope of the purpose. Although payback periods are recognized to be one of the weaker methods of evaluating investments, they were deemed to be appropriate in the case of vocational and technical education since there is a great deal of job mobility in the American society.

The purpose of this chapter is to present the module developed for determining long run accrued benefits and payback periods associated with the various training programs in Kansas.

ASSUMPTIONS

The assumptions on which this module is based include the following.

1. An individual's productivity is indicated by his salary.
2. A training program will have directly benefited only those graduates who are employed in a field related to training.
3. Individuals who did not take vocational training will be productive at approximately the Kansas average salary level for high school graduates who did not go on to college, trade school, etc.
4. Foregone productivity can be measured in terms of the Kansas average wage for high school graduates.
5. The average age of vocational and technical students in Kansas is approximately 18 years.
6. The average salary for workers of a particular type is applicable to workers of that type who have been trained in a vocational or technical program.
7. Interest rates and inflation rates will be roughly balanced over the next forty-seven years and therefore discount rates need not be considered. This assumption is based on an examination of inflation and passport interest rates from 1932 through 1972.

LIMITATIONS

This module is subject to the following limitations.

1. The module is restricted to a societal analysis and does not consider indirect benefits to the individual.
2. Employment in the field related to training is determined by a follow-up conducted approximately four and one half months after completion of training.
3. Program costs are based on previous year budgets.

DEFINITIONS

Accrued Long Run Benefits

The accrued long run benefits refer to the lifetime productivity of vocational program graduates who are employed in their training field less the cost of training and the productivity which would have been expected if they had not taken vocational training. The "long run" adjective refers to the forty-seven year period from high school graduation to retirement. It should be noted, that since averages are used in this calculation, the sum of placed program graduate's accrued benefits reflect the long run benefits of the training program.

Accumulated Productivity

Accumulated productivity is the total productivity of an individual over a given period. Accumulated productivity for the non-vocational and the vocational graduate who did not receive employment in a field related to his training is determined by the Kansas average productivity of high school graduates. In any given individual's case, gender will be considered when determining expected accumulated productivity for vocational graduates who did not receive employment in a field related to their training. The accumulated productivity for the vocational graduate who is employed in a field related to this training will be determined by the Kansas average productivity of a worker in that field.

Cost of Training

Cost of training is the program cost divided by the number of graduates who are employed in a field in which they are trained.

Cost/Benefit Model

A graphic illustration used to determine payback periods and accrued long run benefits.

Foregone Productivity

Foregone productivity is that wage which was not received by the individual because he was in training.

Length of Training

The length of training refers to the length of training programs expressed in years.

Payback Period

Payback period refers to the time it will take for increased productivity of vocational graduates compared to non-vocational graduates to return society's investment.

Productivity

The wage earned by an individual.

Societal Analysis

The interpretation of the effects of occupational salaries on the total population.

Successful Graduate

A graduate employed in the field for which he is trained.

COST/BENEFIT MODEL

The model provides an estimate of the payback period by determining the intersection of a line representing the accumulated productivity of a non-vocational graduate and a line representing the accumulated productivity of a vocational graduate on a time (X Axis) and dollar (Y Axis) graph. The accumulated productivity of the vocational graduate is adjusted to reflect the cost of training and the foregone earning power while in training. Since the average productivity of a non-vocational graduate and the average productivity of a vocational graduate (from a specific type of training program) are compared in these calculations, the resulting payback period is expressed in terms of years after high school graduation, e.g., it takes X years after high school graduation for the increased productivity of a vocational graduate, employed in a field related to training to counterbalance the cost of training and the foregone productivity of students in the program.

An estimate of the accrued long run benefits of the training program is determined by calculating the difference between the line representing the

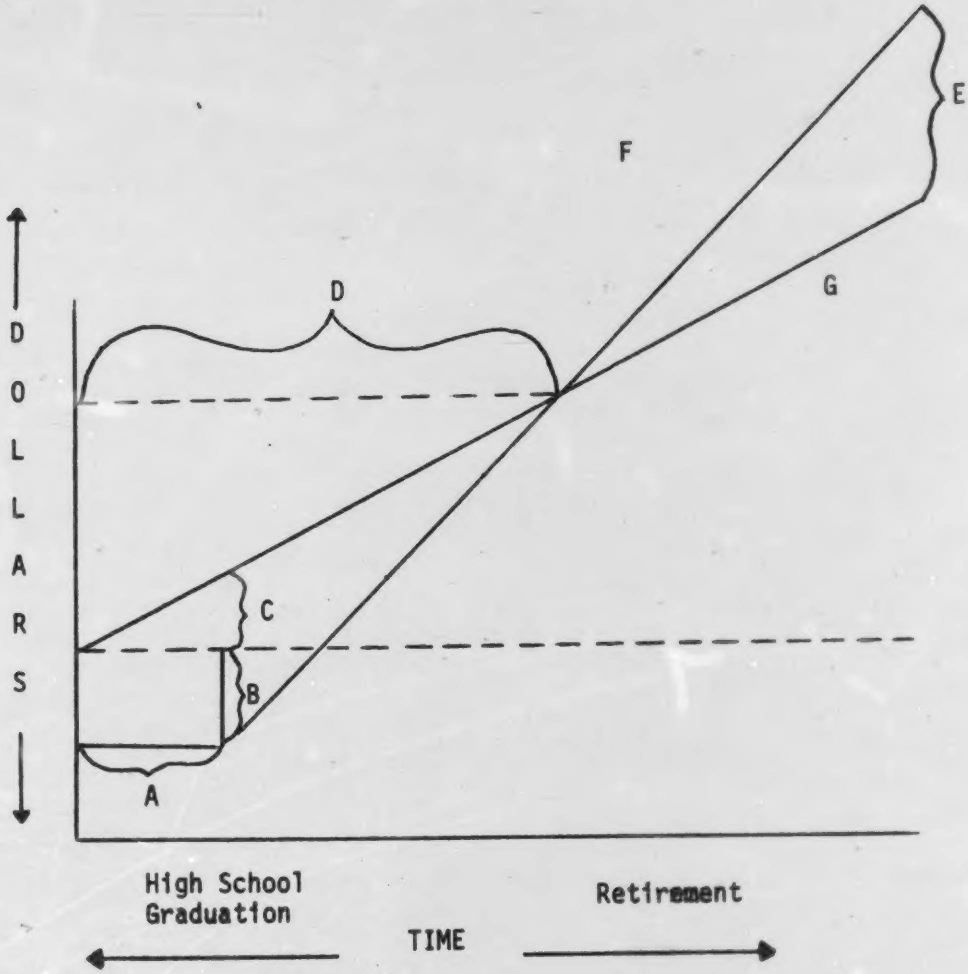


Table of Variables in the Model:

A Length of Training
B Cost of Training
C Foregone Productivity
D Payback Period
E Accrued Long Run Benefits
F Accumulated Productivity for Average Worker in the Field
G Accumulated Productivity for Average High School Graduate

Figure 91. The Societal Cost/Benefit Model

accumulated productivity of a vocational program graduate and the line representing the accumulated productivity of a non-vocational graduate when time equals forty-seven years after high school graduation.

The forty-seven year period is selected for use in this system because a typical high school graduate leaves high school at the age of eighteen. Retirement for this system is assumed to occur at the age of sixty-five. This left forty-seven years for an individual to be productive. It should be noted however, that the forty-seven year figure may be altered to account for different periods of productivity.

DATA COLLECTION

The salary data on the various occupations can be obtained from the 1970 Census of Population for Kansas. These salaries are reported as median earnings (dollars) for persons working in that occupation in Kansas.

The expected annual, average salary for persons in Kansas completing high school can be derived from the median salary figures presented in the 1970 Census of Population for Kansas. For females, this figure is $2,547, while for males the figure is $6,726.

Length of training is established by determining whether a training program is a one year or a two year program. This figure might be more accurately described as the student time effort needed to produce a graduate. These data are taken from the VE 50 (revised) report which is prepared annually by programs in the state.

Cost of Training

Cost of training information is acquired from the Fiscal Year 1972 Budgets prepared by the area schools and reported to the Division of Vocational Education, State Department of Education. Cost of training is based on the total program budget divided by the number of successful graduates placed. Figures are computed for each individual program and each program type found in the schools.

Foregone Productivity

Foregone productivity is calculated by multiplying time in training in years times the average Kansas annual salary for workers who have completed a high school degree.

Determination of "Long Run" Benefits

The "long run" benefits for a particular program are determined using the following formula based on the model presented in this section.

$$LRB = (47 - A) \times B - C/D - 47 \times (E \times 6726 + F \times 2547) / (E + F)$$

where:

A = Length of training program

B = Average salary for workers in occupations in Kansas

C = Cost of training program

D = Number of students placed from training program

E = Number of males in training program

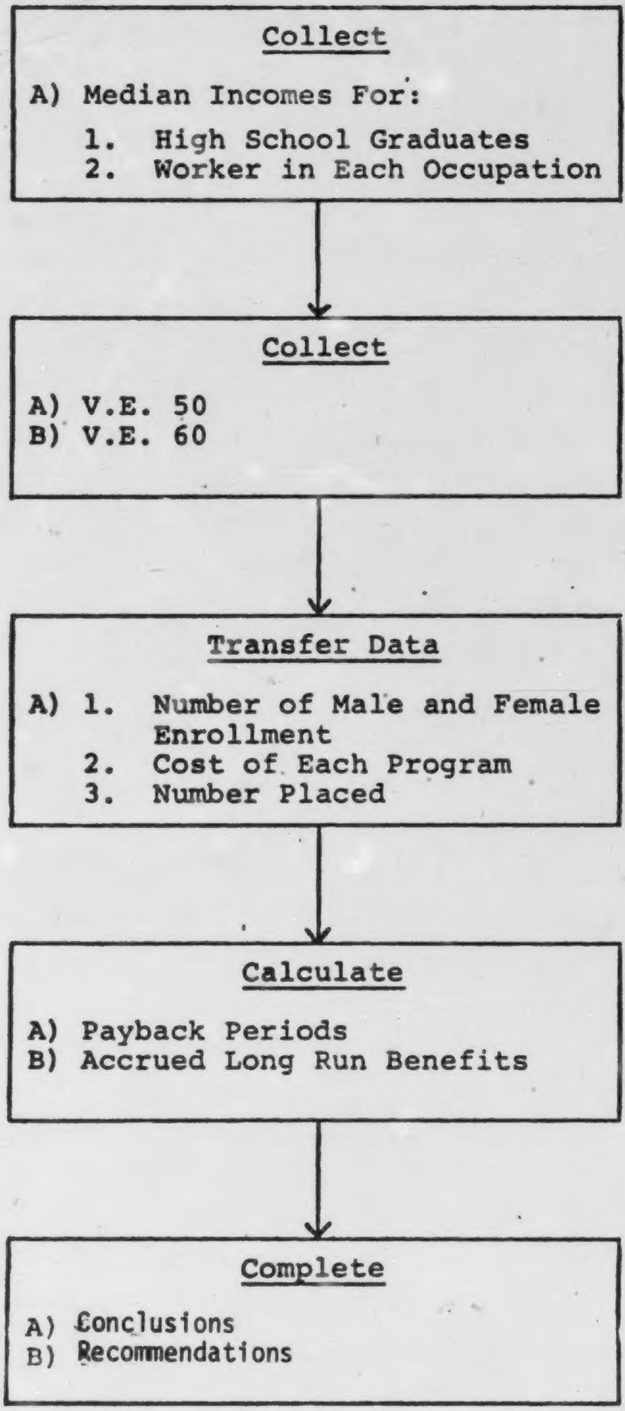
F = Number of females in training program

Payback Period

The payback period for a particular program is determined using the following formula based on the model presented in this section.

$$PBP = \left(\frac{A \times B + C/D}{B - (E \times 6726 + F \times 2547) / (E + F)} \right) \times D$$

Figure 92: Cost/Benefit Analysis Flow Chart



Chapter 8

POTENTIAL STUDENT MODULE

BACKGROUND

When planning vocational or technical education, it is necessary to know the size of the populations of potential students. This chapter is concerned with techniques for identifying populations which have the potential of benefiting from preparatory vocational or technical training. Included in these groups are (1) the disadvantaged, (2) the handicapped, (3) the unemployed and (4) high school students who will not complete higher education. These groups were selected relative to groups described in the 1963 Vocational Education Act and its 1968 Amendments. It is entirely possible and indeed probable that other populations not identified by the techniques presented in this chapter could also benefit from vocational or technical training.

GENERAL MODULE DESCRIPTION

The specific purpose of this module is to estimate the size and geographic distribution of selected disadvantaged, handicapped, unemployed and high school student groups. The populations are identified by estimated number by county. It must be recognized that the populations may overlap, i.e., an individual may be represented in more than one category, and therefore, the estimated total population of potential vocational and technical students cannot be derived as the sum of the various categories of students.

ASSUMPTIONS

The techniques of this module are based on the following assumptions.

1. The handicapped are distributed randomly throughout the state. This

assumption is somewhat questionable in that handicaps are found more frequently among the lower social-economic groups which are not necessarily distributed randomly throughout the state, however, as a rough estimate, the figures should be usable.

2. The percent of high school students who will not complete a higher education program will remain relatively constant throughout the state (on a county basis). Again, the limitations of geographic distributions of social-economic groups play the part of an intervening variable. Although, as in "1" above, the figures should be satisfactory as rough estimates.

3. Average unemployment figures in the near future will be similar to unemployment figures in preceding years.

PROCEDURES

1. Academic Disadvantaged: These figures were derived from updated 1970 census data and present figures on the numbers of persons 25 years old or older who have not graduated from the eighth grade.

2. Economically Disadvantaged: These figures are based on updated 1970 census data and indicate the number of disadvantaged persons by county (that is persons in families where the income is $3,670 or less).

3. Culturally Disadvantaged: These figures represent the numbers of non-whites by county as reported by the 1970 census. It is recognized that many non-whites are not culturally disadvantaged, however, many whites are culturally disadvantaged. These are probably conservative figures.

4. Handicapped: These figures are based on national frequency percentages applied to county populations. The frequency percentages were provided by Mr. James Marshall of the State Department of Education. (See Table 6 for these factors).

5. Unemployed: The data on unemployment was provided by the State Employment Security Office. These figures are based on the average rates in each county for the past year.

6. High School Students Who Will Not Complete Higher Education: The information on students who will not complete higher education was acquired from the Annual Statistical Report for 1969-1970 (Kansas State Department of Education) and current data on the average number of higher education

Table 6*

FACTORS USED TO DETERMINE HANDICAPPED POPULATIONS

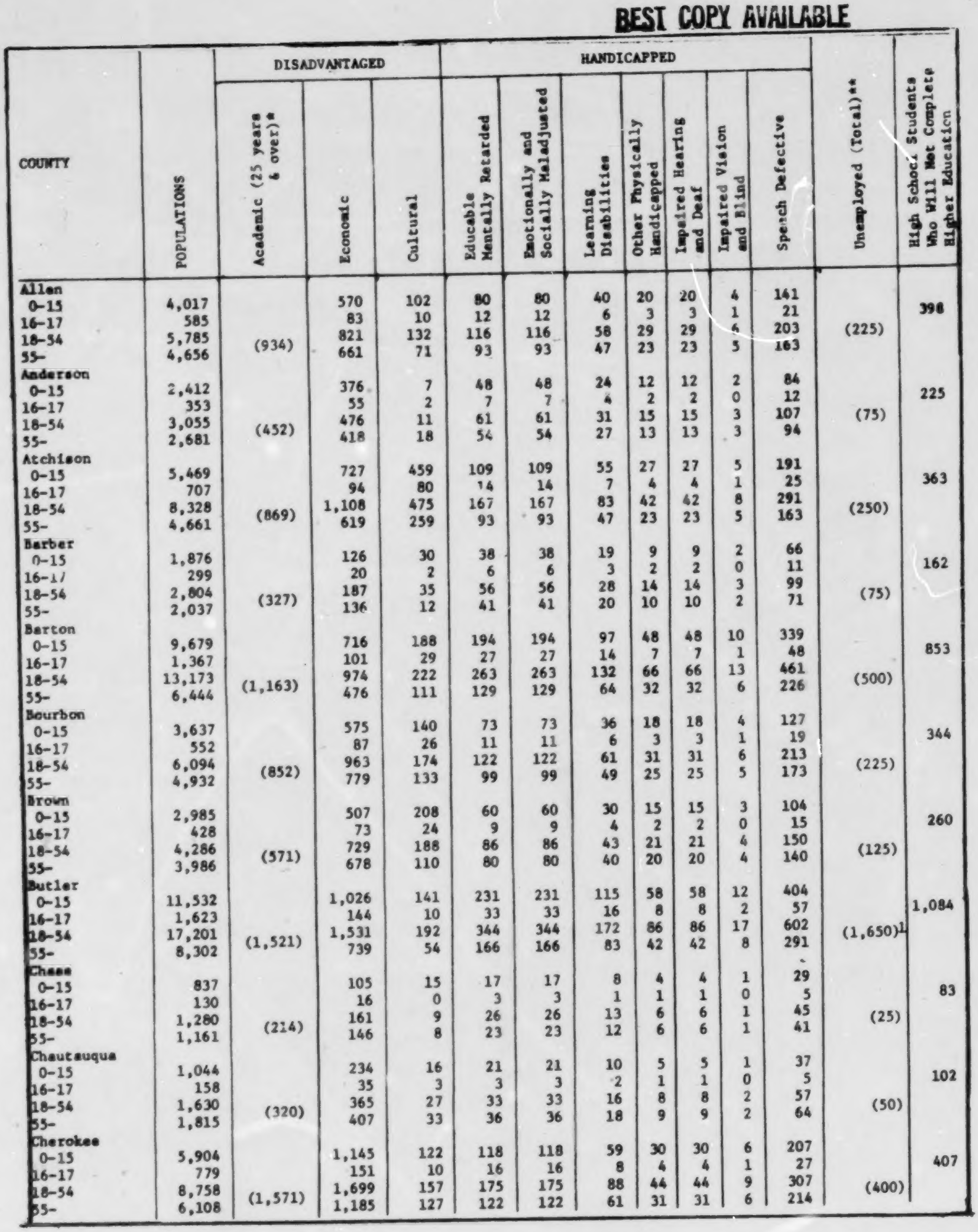
Handicapped Group	Percent of General Population
Educable Mentally Retarded	2.00
Emotionally and Socially Maladjusted	2.00
Learning Disabilities	1.00
Other Physically Handicapped	.50
Impaired Hearing and Deaf	.50
Impaired Vision and Blind	.15
Speech Defective	3.50

*Conservative Percentages by Mr. James Marshall, State Director of Special Education.

graduates in Kansas. The number of high school juniors and seniors in 1966-67 was divided into twice the number of higher education completions in 1971 to give the most current estimate of the percent of high school juniors and seniors who will complete a baccalaureate degree. The converse of this percentage was then multiplied times the number of high school juniors and seniors presently in Kansas schools to determine an estimated number of high school juniors and seniors who will not complete a higher education degree.

OUTPUT

Figure 73 is a sample page from the table used to indicate potential student populations. The numbers under the county heading represent age groupings. Other data is generated as described above.



COUNTY	POPULATIONS	DISADVANTAGED			HANDICAPPED							Unemployed (Total)**	High School Students Who Will Not Complete Higher Education
		Academic (25 years & over)*	Economic	Cultural	Educable Mentally Retarded	Emotionally and Socially Maladjusted	Learning Disabilities	Other Physically Handicapped	Impaired Hearing and Deaf	Impaired Vision and Blind	Speech Defective		
Allen													
0-15	4,017		570	102	80	80	40	20	20	4	141		398
16-17	585		83	10	12	12	6	3	3	1	21		
18-54	5,785	(934)	821	132	116	116	58	29	29	6	203	(225)	
55-	4,656		661	71	93	93	47	23	23	5	163		
Anderson													
0-15	2,412		376	7	48	48	24	12	12	2	84		225
16-17	353		55	2	7	7	4	2	2	0	12		
18-54	3,055	(452)	476	11	61	61	31	15	15	3	107	(75)	
55-	2,681		418	18	54	54	27	13	13	3	94		
Atchison													
0-15	5,469		727	459	109	109	55	27	27	5	191		363
16-17	707		94	80	14	14	7	4	4	1	25		
18-54	8,328	(869)	1,108	475	167	167	83	42	42	8	291	(250)	
55-	4,661		619	259	93	93	47	23	23	5	163		
Barber													
0-15	1,876		126	30	38	38	19	9	9	2	66		162
16-17	299		20	2	6	6	3	2	2	0	11		
18-54	2,804	(327)	187	35	56	56	28	14	14	3	99	(75)	
55-	2,037		136	12	41	41	20	10	10	2	71		
Barton													
0-15	9,679		716	188	194	194	97	48	48	10	339		853
16-17	1,367		101	29	27	27	14	7	7	1	48		
18-54	13,173	(1,163)	974	222	263	263	132	66	66	13	461	(500)	
55-	6,444		476	111	129	129	64	32	32	6	226		
Bourbon													
0-15	3,637		575	140	73	73	36	18	18	4	127		344
16-17	552		87	26	11	11	6	3	3	1	19		
18-54	6,094	(852)	963	174	122	122	61	31	31	6	213	(225)	
55-	4,932		779	133	99	99	49	25	25	5	173		
Brown													
0-15	2,985		507	208	60	60	30	15	15	3	104		260
16-17	428		73	24	9	9	4	2	2	0	15		
18-54	4,286	(571)	729	188	86	86	43	21	21	4	150	(125)	
55-	3,986		678	110	80	80	40	20	20	4	140		
Butler													
0-15	11,532		1,026	141	231	231	115	58	58	12	404		1,084
16-17	1,623		144	10	33	33	16	8	8	2	57		
18-54	17,201	(1,521)	1,531	192	344	344	172	86	86	17	602	(1,650)[1]	
55-	8,302		739	54	166	166	83	42	42	8	291		
Chase													
0-15	837		105	15	17	17	8	4	4	1	29		83
16-17	130		16	0	3	3	1	1	1	0	5		
18-54	1,280	(214)	161	9	26	26	13	6	6	1	45	(25)	
55-	1,161		146	8	23	23	12	6	6	1	41		
Chautauqua													
0-15	1,044		234	16	21	21	10	5	5	1	37		102
16-17	158		35	3	3	3	2	1	1	0	5		
18-54	1,630	(320)	365	27	33	33	16	8	8	2	57	(50)	
55-	1,815		407	33	36	36	18	9	9	2	64		
Cherokee													
0-15	5,904		1,145	122	118	118	59	30	30	6	207		407
16-17	779		151	10	16	16	8	4	4	1	27		
18-54	8,758	(1,571)	1,699	157	175	175	88	44	44	9	307	(400)	
55-	6,108		1,185	127	122	122	61	31	31	6	214		

Figure 93: Sample Page from Potential Student Table

Chapter 9

STUDENT INTEREST MODULE

BACKGROUND

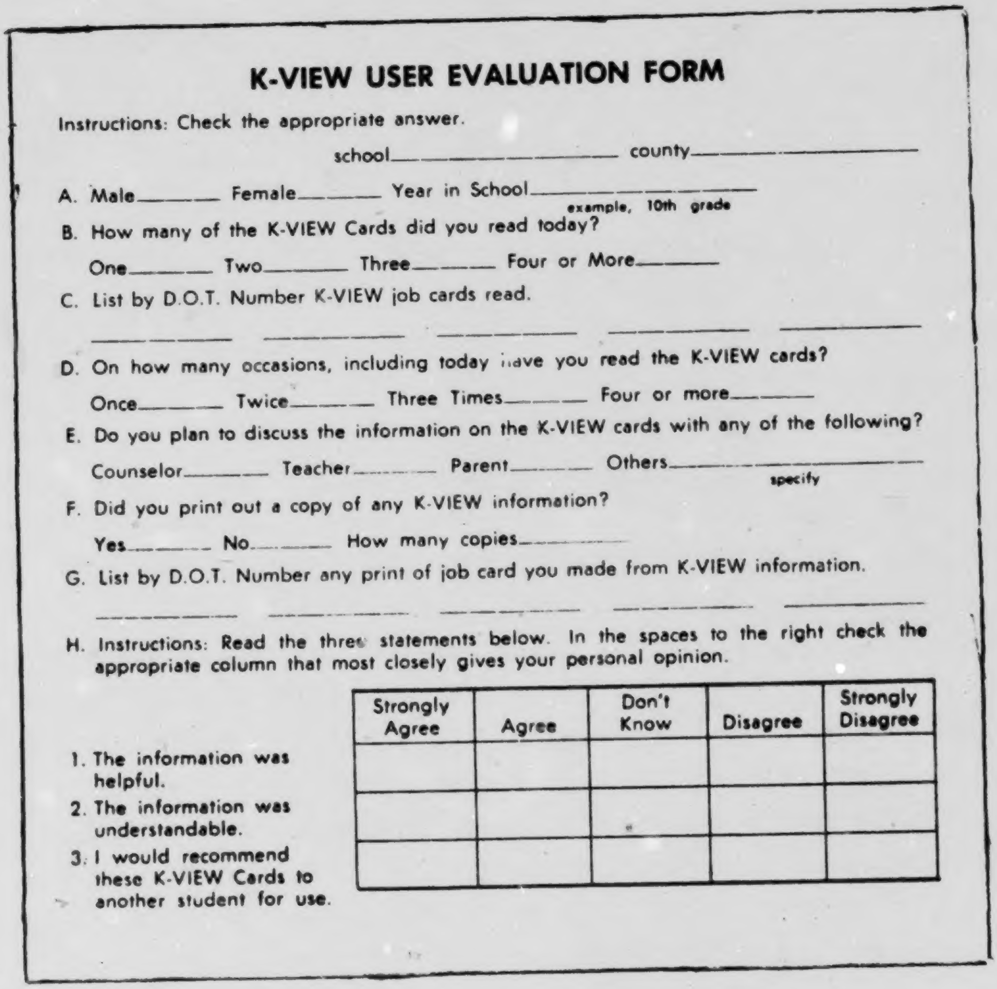
Vacant seats or stations in the vocational or technical education classrooms represent a waste of taxpayers money. This fact emphasizes the point that student interest as well as manpower needs must be considered when planning programs.

In the past, vocational and technical education planners have either not had any data on student interest or have had data generated by a student interest scale. Many planners feel that some objective measure of student action is necessary to obtain a realistic picture of how potential students will react to various program offerings.

In 1971, a new counseling tool (called K-VIEW) was introduced in Kansas. This technique provides potential vocational or technical students with an opportunity to scan occupational information at their leisure. A student can go to the library in his home high school, select any one of over 150 occupations and review materials related to that occupation. This is a student initiated action which is related to the student's occupational and hence, educational preference. This module uses K-VIEW references by students to predict student interest in various program clusters.

GENERAL MODULE DESCRIPTION

When a student references K-VIEW material, he completes a reference card which indicates which jobs were examined. (Figure 94 is an example of the reference card.) The reference cards are mailed to the K-VIEW Director at the end of each school year. The K-VIEW Director forwards these cards to the K-MUST staff who compile the data into number of references per occupation. The occupations have been clustered into related occupation groupings. The data is further compiled into number of references per occupational group.



K-VIEW USER EVALUATION FORM

Instructions: Check the appropriate answer.

school ______________ county ______________

A. Male ______ Female ______ Year in School ______________
example, 10th grade

B. How many of the K-VIEW Cards did you read today?

One ______ Two ______ Three ______ Four or More ______

C. List by D.O.T. Number K-VIEW job cards read.

__________ __________ __________ __________ __________

D. On how many occasions, including today have you read the K-VIEW cards?

Once ______ Twice ______ Three Times ______ Four or more ______

E. Do you plan to discuss the information on the K-VIEW cards with any of the following?

Counselor ______ Teacher ______ Parent ______ Others ______________
specify

F. Did you print out a copy of any K-VIEW information?

Yes ______ No ______ How many copies ______

G. List by D.O.T. Number any print of job card you made from K-VIEW information.

__________ __________ __________ __________ __________

H. Instructions: Read the three statements below. In the spaces to the right check the appropriate column that most closely gives your personal opinion.

	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree
1. The information was helpful.					
2. The information was understandable.					
3. I would recommend these K-VIEW Cards to another student for use.					

Figure 94: Sample of K-VIEW Reference Card

Occupational groups are then ranked by the number of references per group. The higher the rank of a particular group, the greater is the predicted student interest. Figure 95 is a graphic illustration of the student interest module.

DEFINITIONS OF THE OCCUPATIONAL GROUPINGS

Agricultural Workers

Workers in these occupations are concerned with growing, harvesting, catching, and gathering land and aquatic plant and animal life and the products thereof; and occupations concerned with providing services in support of these activities.

Clerical Workers

These are workers concerned with making, classifying and filing records including written communications.

Construction Workers

These workers are in craft and non-craft occupations, not elsewhere classified, concerned with the building and repairing of structures.

Drivers and Deliverymen

These workers are concerned with transporting cargo over highways, city streets, or within compounds of industrial construction or mining areas, by driving vehicles powered by gasoline, diesel, propane, or related fuels, or electricity.

Food Service Workers

This area includes workers concerned with preparing food and beverages and serving them to patrons of such establishments as hotels, clubs, restaurants, and cocktail lounges.

Mechanics and Repairmen

Workers in this group are concerned with repairing engines and accessories, power trains, suspension systems, and other mechanical units of automobiles, trucks, tractors, buses, and trackless trolley; graders, bulldozers, cranes, power shovels, portable air-compressors, and other gasoline

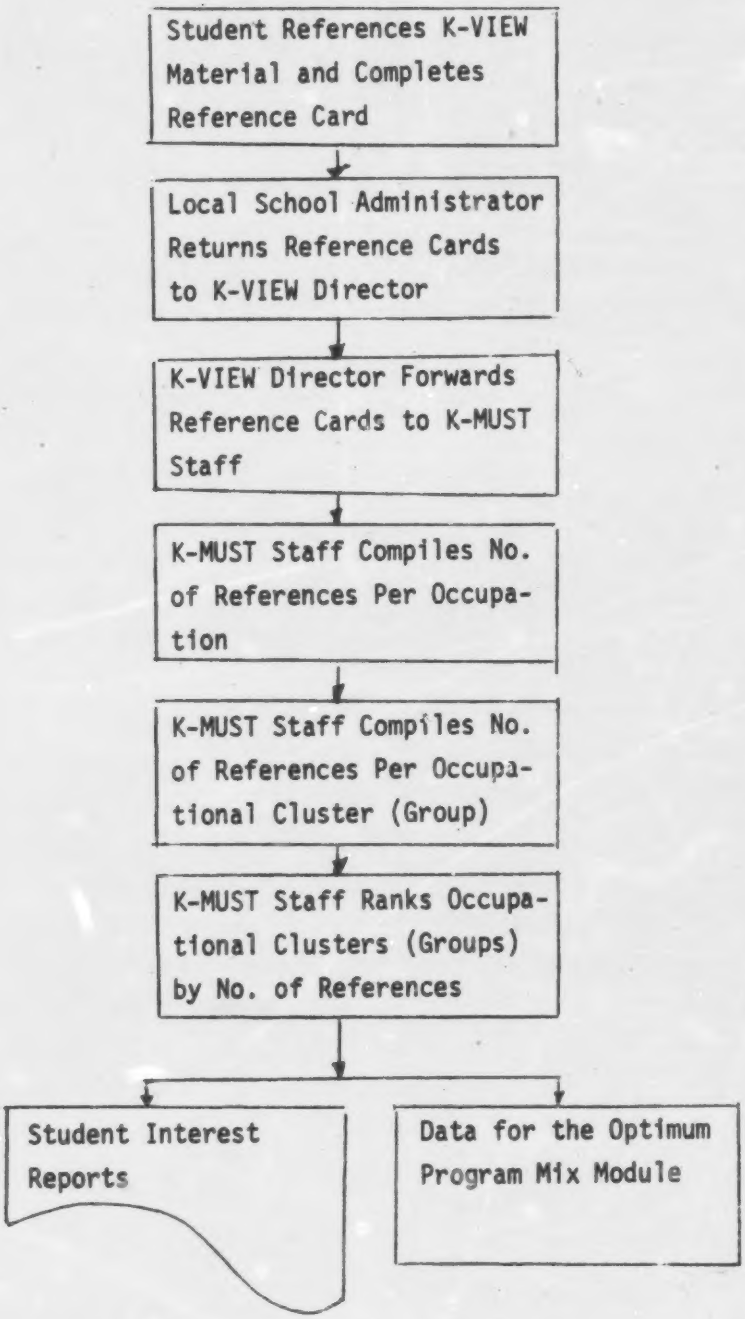

Student References K-VIEW Material and Completes Reference Card
Local School Administrator Returns Reference Cards to K-VIEW Director
K-VIEW Director Forwards Reference Cards to K-MUST Staff
K-MUST Staff Compiles No. of References Per Occupation
K-MUST Staff Compiles No. of References Per Occupational Cluster (Group)
K-MUST Staff Ranks Occupational Clusters (Groups) by No. of References
Student Interest Reports
Data for the Optimum Program Mix Module

Figure 95: Action Flow Chart of the Student Interest Module

or diesel-powered engineering equipment; motorized materials, handling equipment and wheeled or tracked military vehicles.

Medical Workers

These workers include those subprofessionals concerned with the health care of humans or animals or work in occupations in sanitation, environmental and public health, or in laboratories or other health facilities.

Metal Craftsmen

Workers in this area are concerned with shaping and conditioning metal by rolling, forging, extruding, drawing out, punching, blanking, and press working.

Printing Craftsmen

This group includes workers concerned with assembling and setting type matter for printing by means of typesetting or composing machines. It includes craftsmen at linotype machines which assemble letters into lines and cast strips of type from type metal, and monotype machines which compose type matter in separate letters.

Protective Service Workers

Workers in this area are concerned with protecting the public against crime, fire, accidents, and acts of war.

Salesworkers

These workers are to be found in occupations concerned with selling commodities when knowledge of the commodities sold is required.

Service Workers N.E.C.

These are workers in service occupations that have not been previously classified.

Technicians N.E.C.

These are workers in technical occupations not classified as medical.

Textile Occupations

Workers in these occupations are concerned with shaping, joining, spinning, weaving and otherwise fabricating textiles, textile products, fur and hair.

Transportation and Public Utilities N.E.C.

These are occupations concerned with generation, transmission, and distribution of electricity; generation and distribution of steam for heat and power, including marine propulsion; generation of utility gas, and storage and distribution of natural and manufactured gas for power, illumination, or heating purposes; filtration, purification, and distribution of water for domestic, commercial, or industrial consumption; and collection, treatment, and disposal of sewage and refuse.

This division includes operators concerned with moving people or materials by means of automotive and railway vehicles, aircraft, freshwater or seagoing vessels, pipes, and pumps. Their activities include loading bulk materials into conveyances; ascertaining number of passengers and amount and kind of materials being conveyed; directing course of carrier; routing materials; servicing carriers; and related activities.

Chapter 10

PHYSICAL FACILITY MODULE

BACKGROUND

In Kansas, the Division of Vocational Education assists local districts in the construction and renovation of vocational facilities as funds are available. Kansas law, however, prohibits the use of state funds for the construction of local educational facilities. Therefore, funds for vocational education facility construction are usually fifty percent federal and fifty percent local.

Through 1969, all vocational education funds for construction received by Kansas from Federal sources were used entirely for construction at the Kansas area vocational-technical schools. No vocational education monies were made available for construction in 1970 due to insufficient funds.

Local Kansas school districts submit applications for construction assistance, and funds are allocated on a project basis after the need is evaluated. All construction projects which involve Federal funds must comply with Federal labor and equal opportunity standards, and with Kansas law which requires competitive bidding on the construction of public buildings.

During 1971, the Division of Vocational Education approved a total of $506,875 to be spent on area vocational-technical school physical facility construction of which $253,437 was Federal money, and $253,438 was local matching funds.

With the limited amount of funds available, it is necessary to determine which of the proposed facilities are most needed. This module deals with the problem of establishing priorities for construction.

DEFINITIONS USED IN THE MODULE

The following operational definitions are used in this module.

Job Placement Rate

The percent of graduates from the applicants schools who found employment in a job related to their training.

Monies Requested

Financial requests submitted to the Division of Vocational Education, Kansas State Department of Education, for physical facility expansion and renovation by local school administrators.

Physical Facilities

The educational physical plant of any of the applicant schools, regardless of whether the buildings are owned, rented, leased, or borrowed.

Physical Facility Utilization Rate

A rate expressed as a percentage that identifies the use being made of current physical facilities for programs at applicant schools in Kansas. This rate expresses a comparison of actual use of the facilities and the potential full capacity use of the facilities as identified by applicant school administrators.

Program

The uniqueness of a course of occupational study at a specific school; for example, all classes offered at any Kansas area vocational-technical school for the training of welders.

Program Type

Occupational training generalized to describe similar programs of study at all applicant schools; for example, welding programs.

Student Capacity

The total number of students which can reasonably be trained in the normal duration of an educational training period.

Student Overflow

The number of student applicants at applicant schools who were not admitted because of a lack of physical facility space.

Total Square Footage

The total number of square feet of classroom and laboratory space utilized by a program at any of the applicant schools.

GENERAL MODULE DESCRIPTION

Each administrator applying for building funds is mailed a questionnaire for each program under his supervision. (See Figure 96). Two weeks after the questionnaires have been mailed, a K-MUST staff member visits the administrator to gather the questionnaires and to discuss suggestions concerning the factual interpretation of the data pertaining to his school.

The questionnaire contains thirteen questions. Each question is designed to obtain information on specific topics pertaining to the vocational education physical facilities at the applicant school. The purpose of each of the thirteen questions is as follows.

Question 1: Designed to elicit information pertaining to the number of instructors for each program and program type in the school.

Question 2: Directed toward obtaining the total "shop/laboratory" square footage available to a specific school and program type.

Question 3: Directed toward obtaining the total "classroom" square footage for each school and program type.

Question 4: Gathers information on the hours spent by the instructors in the "classroom" per day for each school and program type.

Question 5: Designed to acquire information on the job placement percentage of the most recent graduating class for each school and program type.

Question 6: Designed to depict the student "overflow" for each school and program type.

Question 7: Gathers information on the maximum number of students that could be taught per hour by school and program type.

Question 8: Designed to depict the number of students currently enrolled during each hour of the school day for each school and program type.

Question 9: Designed to acquire information on program instructor opinion of the current condition of physical facilities for each school and program type.

PROGRAM TITLE:

____

Number of full-time instructors: ____________ *(Instructors)*

Total "shop/laboratory" square feet: ____________ *(Sq. ft.)*

Total "classroom" square feet: ____________ *(Sq. ft.)*

Program hours spent in classroom per day ____________ *(Hrs.)*

Percent of placement for last graduating class? ________ *(Percent)*

Student "overflow": ____________ *(Students)*

Acceptable student capacity (per hour): ____________ *(Students)*
(Maximum work stations available)

Starting Time ( ) *(Time)*   ( ) Ending Time *(Time)*

			LUNCH			

Directions: Write in the number of students (head count) in each separate hour of the program.

Status of condition of present facilities. ____________
A = Top grade B = Desirable C= Satisfactory D = Adequate E = Poor

Do you own ☐ rent ☐ lease ☐ the program facilities.
borrowed ☐

Do you anticipate expanding this program within the next 5 years:

Yes ☐ No ☐

If "yes", please justify:

Approximate physical facilities expansion cost: $____________

Figure 96: Facility Utilization Questionnaire

Question 10: Gathers information on the ownership of current physical facilities for each school and program type.

Question 11: Designed to discover whether or not there were any plans for program expansion for each school and program type.

Question 12: Gathers specific information and justification of intended plans for program expansion for each school and program type.

Question 13: Designed to acquire information on the approximated costs for new construction or expansion of current physical facilities for each school and program type.

Upon completion of the personal interview phase of the survey, all instruments are compiled and tabulated to yield the following information.

1. The total square footage of instructional area and the student capacity at each applicant school.
2. The physical facility utilization rate, student overflow, student placement rate, student capacity and total student applications at the applicant schools by program type.
3. The funds requested for physical facility expansion by program type which are clustered into occupational categories identified by Price in Volume II.

The computation of total square footage of instructional area at each applicant school is accomplished by summing the square footage reported for all programs at each school. Total student capacity by school is also summed using all programs reported by each school.

Student overflow, or the number of students rejected because of limited space, is totaled for each program type and for each applicant school.

Program facility utilization rates are computed on the basis of actual student enrollment during the normal six-hour school day. Physical facilities have very little use prior to 9:00 a.m. or after 4:00 p.m. The base established for each program is the reported student capacity. The number of students actually in class during the normal six-hour day is averaged. This average is then divided by reported full capacity and the resulting percentage is labeled the program physical facility utilization rate.

The placement rates for graduates of programs at the applicant schools are averaged and reported as placement rates by program type.

The total student applications by program are calculated by averaging the actual number of students enrolled during the six-hour day, and adding to this figure the student overflow reported for that program. The total potential student applications are reported by program type.

PROCEDURES FOR ANALYSIS

The technique to be used in analyzing the need for additional state funds for physical facility expansion at Kansas schools involves the computation of correlations between:

1. School student capacity and physical facility size.
2. Program facility utilization rates and student overflow.
3. Program facility utilization rates and the placement rates of graduates.
4. Manpower needs and funds requested for expansion by program type.
5. Student interest and funds requested for expansion by program type.

A second technique involves the determination of the significance of the difference between full student capacity of physical facilities at the applicant schools in Kansas and the total number of applications to each program type by potential students.

If a significant positive correlation is found between school student capacity and physical facility size, it may be assumed that the size of the facility does affect student capacity and further study of the program is indicated. If no significant correlation is found between these two variables, the vocational administrator may conclude that current physical facilities are adequate, or that other variables need to be investigated.

Program physical facility utilization rates are then compared with the student overflow from programs in the applicant schools. If a significant positive correlation is found between these two variables, added support is indicated for the allocation of funds for physical facility expansion to those programs which must annually refuse training to large numbers of students due to lack of space. Should no significant correlation be found between these two variables, increased facility utilization is indicated.

Next, program facility utilization rates are compared with student placement rates by program. If a significant positive correlation is found to exist between these two variables, those programs operating at or near full capacity with high placement rates should receive additional funds for physical facility expansion. No significant correlation between these two variables would indicate that program physical facility usage has little or no effect on program efficiency and further investigation is recommended.

If in comparison, total student applications by program prove to be significantly greater than full student capacity, consideration should be given to funding those requests for physical facility expansion from applicant school programs for which applications exceed capacity. Should student capacity be shown to be significantly greater than student applications by program, it could be assumed that adequate physical facility space exists for current school programs. If, however, no significant difference is found to exist between these variables, it could be assumed that adequate school space exists for all student applicants although it might mean that students may have to make different program selections or apply to other schools in order to receive training.

The next comparison is between manpower needs and the funds requested for physical facility expansion by program. If a significant positive correlation is found to exist between these variables, it could be assumed that school administrators have given high priority to manpower needs as a criterion in initiating their existing programs. Should no significant correlation be found to exist between these variables, the use of manpower needs as a criterion for the planning of future applicant school programs should be reemphasized.

The final comparison made in this procedure is between student interest and the funds requested for physical facility expansion by program at the applicant schools in Kansas. A significant positive correlation between these variables would indicate that school directors have given high priority to student interest in the planning of existing programs. If no significant correlation is found between these two variables, consideration should be given to greater utilization of student interest as a criterion for program planning.

When the preceding comparisons of variables have been accomplished, the vocational administrators at the Kansas Department of Education will have additional information on which to base decisions concerning all allocations of state funds requested by the various applicant schools for physical facility expansion.

Chapter 11

DISADVANTAGED AND HANDICAPPED MODULE

BACKGROUND

The 1968 Amendments to the 1963 Vocational Education Act specifically identify the disadvantaged and handicapped as groups to be served by vocational and technical education. In 1972, when Kansas returned a large portion of the set aside monies for these groups to the federal government, it became apparent that more information was needed about the disadvantaged and handicapped on which to base funding decisions. At that time, Mr. Wilber Rawson, State Supervisor of Special Needs, requested that the K-MUST staff develop a module which would provide disadvantaged and handicapped data for input to the budgeting module (see Chapter 16). The purpose of this data is to insure an equitable distribution of funds where needed to support special requirements of disadvantaged and handicapped students.

The Student Accounting System Module (Chapter 2) provides a data collection procedure which gathers enrollment, completion, and placement information on all student groups. This chapter presents a technique for analyzing the disadvantaged and handicapped enrollment data collected by the Student Accounting System.

GENERAL MODULE DESCRIPTION

Data from the Student Accounting System Module (Chapter 2) and the Potential Student Population Module (Chapter 8) are combined to analyze the participation of the disadvantaged and handicapped in regular vocational programs across the state. The analysis is relative to (1) the percentage of various disadvantaged groups in schools offering vocational training versus the percentage of the groups in the general population being served by the schools, (2) a comparison of different program types in terms of the proportion of disadvantaged and handicapped enrolled, and (3) a comparison of different programs of the same type in terms of the proportion of disadvantaged and handicapped enrolled. The statistical tool used in this analysis is the Chi Square Test of Independence. Specific hypotheses that are tested in the analysis are:

Hypothesis 1:

There is a significant difference between the proportion of vocational students who are academically disadvantaged and the porportion of the population to be served who are academically disadvantaged.

Hypothesis 2:

There is a significant difference between the proportion of vocational students who are from a minority group and the proportion of the population to be served who are from a minority group.

Hypothesis 3:

There is a significant difference between the proportion of vocational students who are economically disadvantaged and the proportion of the population to be served who are economically disadvantaged.

Hypothesis 4:

There is a significant difference between the proportion of vocational students who are mentally handicapped and the proportion of the population to be served who are mentally handicapped.

Hypothesis 5:

There is a significant difference between the proportion of vocational students who are physically handicapped and the proportion of the population to be served who are physically handicapped.

Hypothesis 6:

There is a significant difference between vocational program types relative to the proportion of academically disadvantaged students enrolled.

Hypothesis 7:

There is a significant difference between vocational program types relative to the proportion of minority students enrolled.

Hypothesis 8:

There is a significant difference between vocational program types relative to the proportion of economically disadvantaged students enrolled.

Hypothesis 9:

There is a significant difference between vocational program types relative to the proportion of mentally handicapped students enrolled.

Hypothesis 10:

There is a significant difference between vocational program types relative to the proportion of physically handicapped students enrolled.

Hypothesis 11:

For a particular type of vocational training, there is a significant difference between the proportion of academically disadvantaged students enrolled in different schools.

Hypothesis 12:

For a particular type of vocational training, there is a significant difference between the proportion of minority students enrolled in different schools.

Hypothesis 13:

For a particular type of vocational training, there is a significant difference between the proportion of economically disadvantaged students enrolled in the different schools.

Hypothesis 14:

For a particular type of vocational training, there is a significant difference between the proportion of mentally handicapped students enrolled in different schools.

Hypothesis 15:

For a particular type of vocational training, there is a significant difference between the proportion of physically handicapped students enrolled in different schools.

DATA COLLECTION

The Enrollment File of the Student Accounting System (Module 1, Chapter 2) is the input for student by program by handicap or disadvantage data. Data on the general population for various areas (by school) to be served is obtained from the Potential Student Population Module (Chapter 2).

DATA PREPARATION

Student by program by handicap or disadvantage data comes directly from the Enrollment File and no manual preparation is needed beyond that accomplished in the Student Accounting System Module. (Note: See Chapter 2 for the file record layout). Input relative to the general population is coded according to the format shown in Figure 97. One card is prepared for each school being examined. In the case of the software presented in this chapter, fourteen schools are studied. The software can be easily modified for any number of schools.

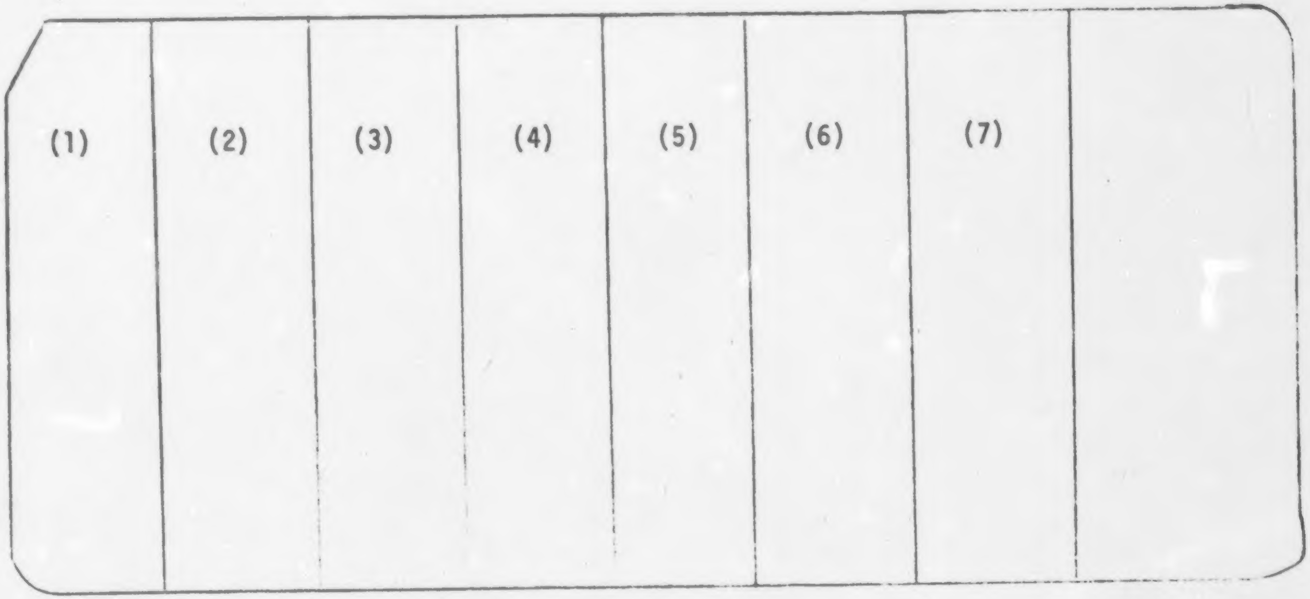
Two other card files must be prepared for housekeeping purposes, i.e., a Program File and a Header File. The Program File identifies possible program types. A data rider on the first thirty cards in this file is Chi Square Table values for degrees of freedom from one to thirty. The Program File is formated as shown in Figure 98. Columns 1 through 4 contain the first four digits of vocational program codes used in the Student Accounting System while columns 5 through 9 (on cards 1 through 30) contain Chi Square Table values. Columns 5 through 9 on the last 170 cards are punched with zeroes. (Note: Chi Square Table values for degrees of freedom greater than thirty are computed using the standard formula). The Header File contains page labels for various types of output. The Header File is presented in total in Figure 99.

DATA OUTPUTS

There are four types of output from the software presented in this module.

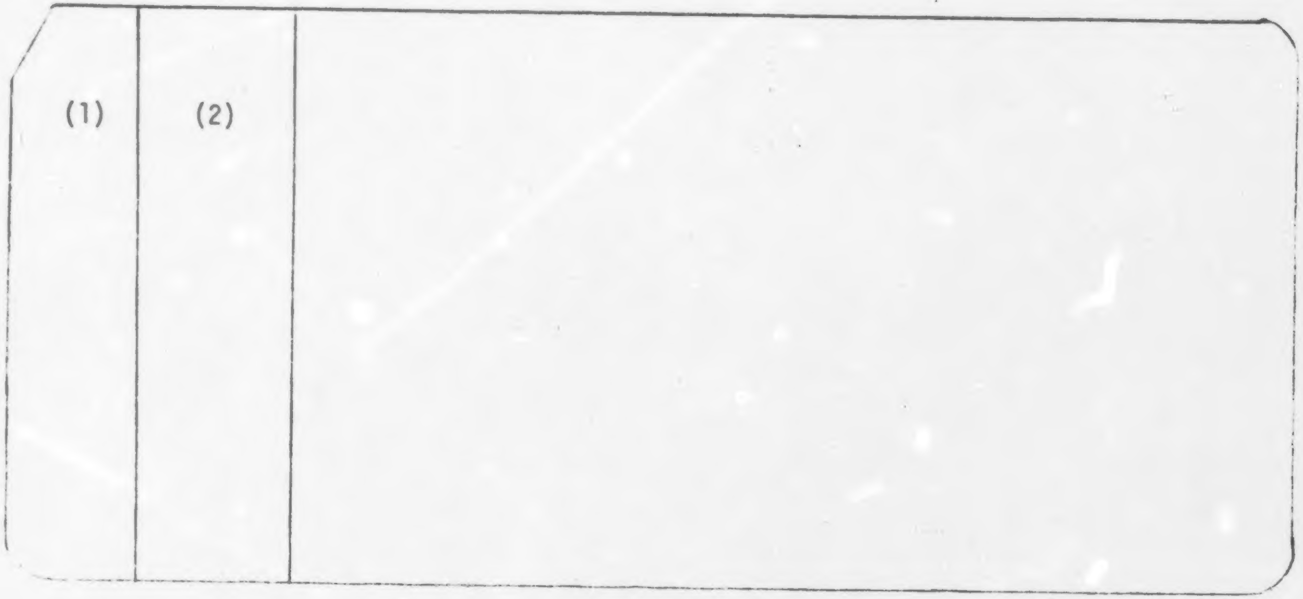
Output Type 1:

The first type of output is a listing of programs by school with the number enrolled, the number in each disadvantaged and handicapped group, the total number of disadvantaged and/or handicapped enrolled and the percentage of disadvantaged and/or handicapped students in the enrollment indicated. Figure 100 is a sample of output type 1.



1. CC 1-6 The first six digits of the school code used in the Student Accounting System.
2. CC 7-12 The number of persons in the general population being served by the school.
3. CC 13-18 The number of academically disadvantaged persons in the general population being served.
4. CC 19-24 The number of non-white persons in the general population being served.
5. CC 25-30 The number of economically disadvantaged persons in the general population being served.
6. CC 31-36 The number of mentally handicapped persons in the general population being served.
7. CC 37-42 The number of physically handicapped persons in the general population being served.

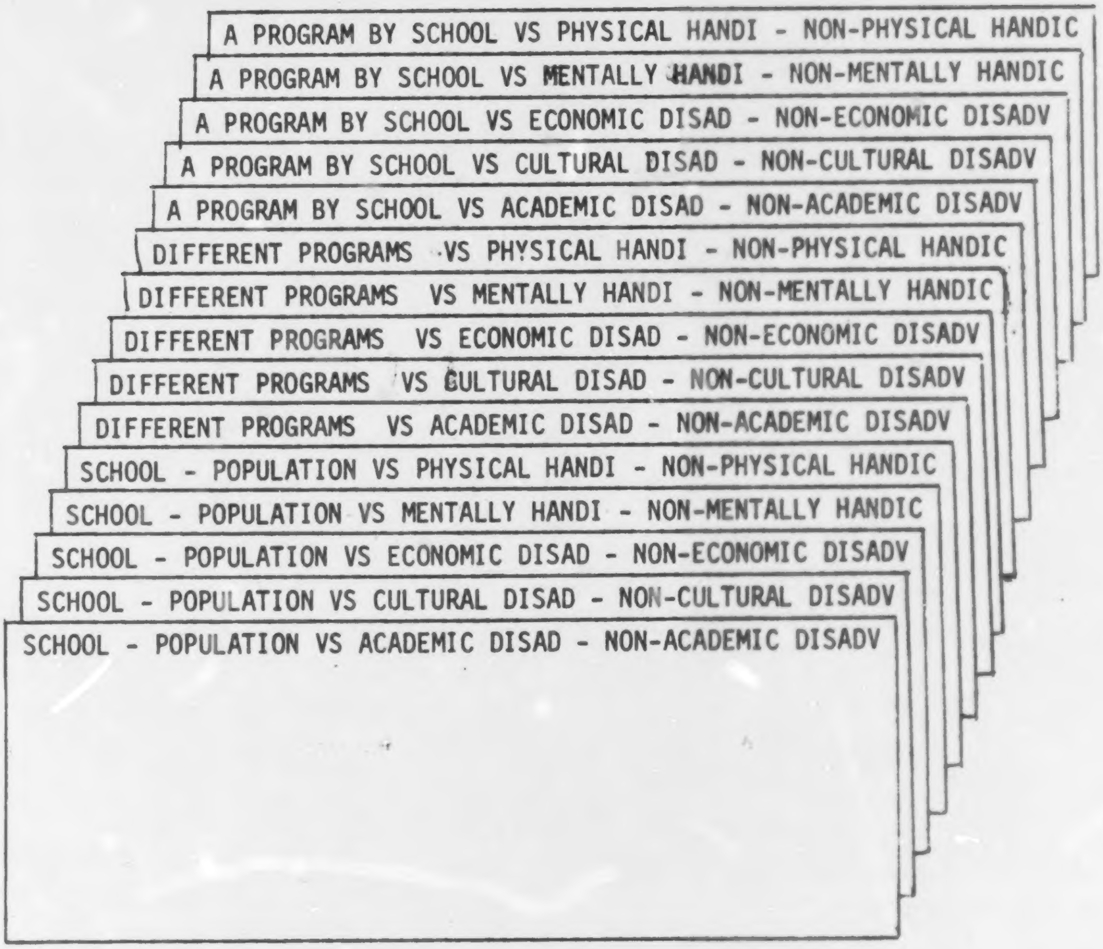
Figure 97. Card layout for the General Population File



1. CC 1-4 First four digits of program codes found in the Student Accounting System Module. (Note: 200 cards)

2. CC 5-9 Chi Square Table Values for one degree of freedom through thirty degrees of freedom. There is an assumed decimal between CC 7 and CC 8. (Note: The first thirty cards contain Chi Square Table values while the following 170 cards contain zeroes. The table values are sequenced by degrees of freedom, i.e., card one contains the table value for one degree of freedom.

Figure 98. Card layout for the Program File



A PROGRAM BY SCHOOL VS PHYSICAL HANDI - NON-PHYSICAL HANDIC
A PROGRAM BY SCHOOL VS MENTALLY HANDI - NON-MENTALLY HANDIC
A PROGRAM BY SCHOOL VS ECONOMIC DISAD - NON-ECONOMIC DISADV
A PROGRAM BY SCHOOL VS CULTURAL DISAD - NON-CULTURAL DISADV
A PROGRAM BY SCHOOL VS ACADEMIC DISAD - NON-ACADEMIC DISADV
DIFFERENT PROGRAMS VS PHYSICAL HANDI - NON-PHYSICAL HANDIC
DIFFERENT PROGRAMS VS MENTALLY HANDI - NON-MENTALLY HANDIC
DIFFERENT PROGRAMS VS ECONOMIC DISAD - NON-ECONOMIC DISADV
DIFFERENT PROGRAMS VS CULTURAL DISAD - NON-CULTURAL DISADV
DIFFERENT PROGRAMS VS ACADEMIC DISAD - NON-ACADEMIC DISADV
SCHOOL - POPULATION VS PHYSICAL HANDI - NON-PHYSICAL HANDIC
SCHOOL - POPULATION VS MENTALLY HANDI - NON-MENTALLY HANDIC
SCHOOL - POPULATION VS ECONOMIC DISAD - NON-ECONOMIC DISADV
SCHOOL - POPULATION VS CULTURAL DISAD - NON-CULTURAL DISADV
SCHOOL - POPULATION VS ACADEMIC DISAD - NON-ACADEMIC DISADV

(Note: All header titles start in CC 17 and end in CC 75.)

Figure 99. Cards in the Header File

```
        SUMMARY OF DISADVANTAGED AND HANDICAPPED DATA
                      RAW DATA SUMMARY

SCH        PROG      ACA   CUL   ECO   MEN   PHY   TOT   ENR   PCT

527905     1704       33     2    10     6     5    38    67   .56

527905     1709                                           10   .00

527905     1713       15     1     7     4     4    22    32   .68

527905     1729        7           2     2     1    10    24   .41

527905     1738        9           4    12     2    16    30   .53

527905     1742        7     1     2     3     1     9    17   .52

527905     1745       22     1    10    21     5    27    42   .64

968914     0400              5     3                 5    32   .15

968914     0490             12                      12    33   .36

968914     0741              5                       5    13   .38

968914     0746             20     5                20    53   .37

968914     0791             15     4           1    15    44   .34

968914     0923             15                      15    23   .65

968914     1400             14     5                14    37   .37

968914     1480             22     6                23    88   .26

968914     1490             23                      23   124   .18

968914     1607              5           1     1     6    66   .09

968914     1703              7                       7    48   .14

968914     1704             36     7                36   125   .28

968914     1713             11     6                11    11  1.00

968914     1724              5                       5    29   .17
```

Figure 100. Sample page of Output Type 1.

Output Type 2:

The second type of output is cell entries for each Chi Square Test run to analyze Hypotheses 1 through 5. Figure 101 shows a sample page.

Output Type 3:

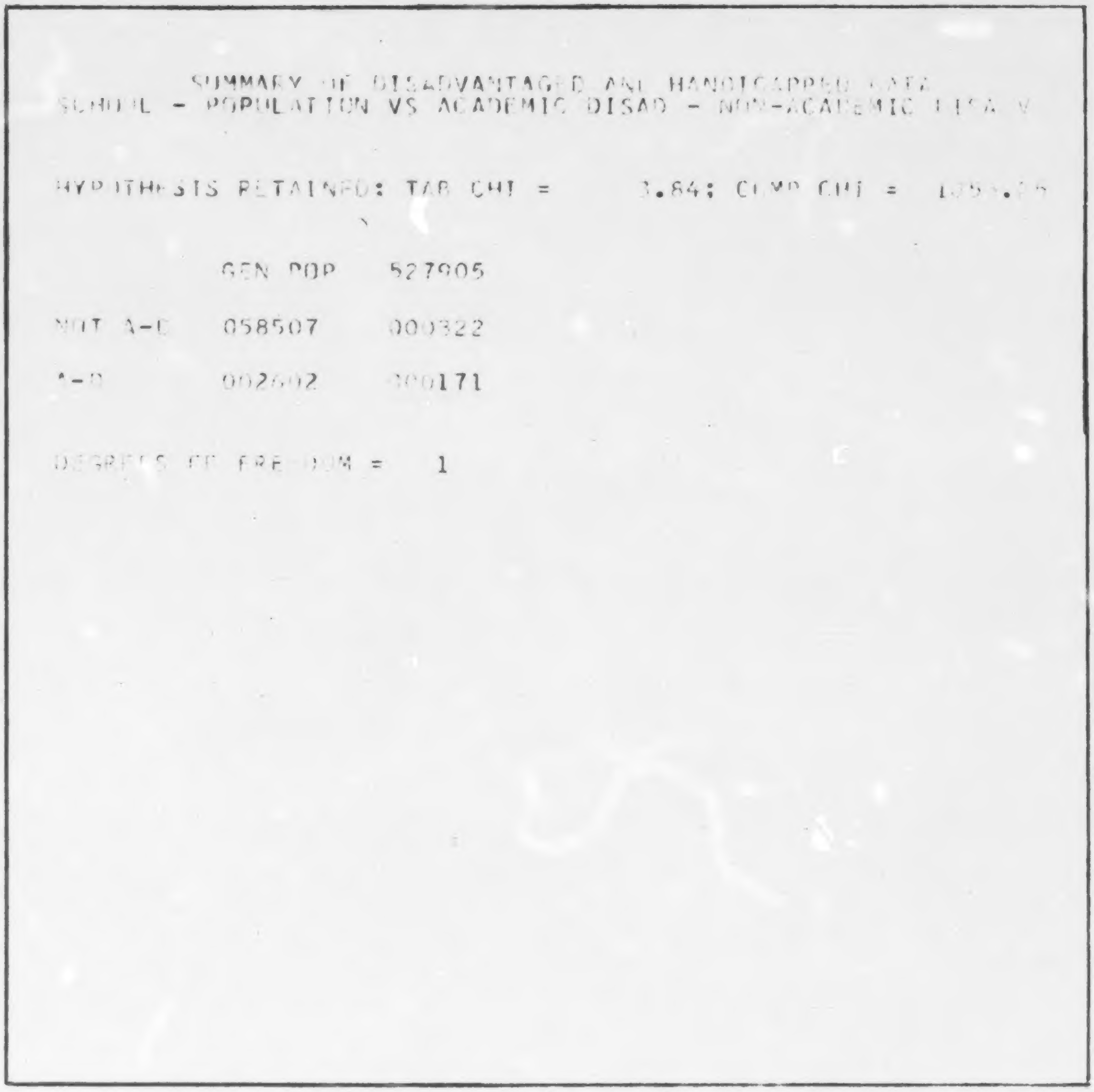
The third type of output is cell entries for each Chi Square Test run to analyze Hypotheses 6 through 10. Figure 102 shows a sample page.

Output Type 4:

The fourth type of output is cell entries for each Chi Square Test run to analyze Hypotheses 11 through 15. Figure 103 shows a sample page.

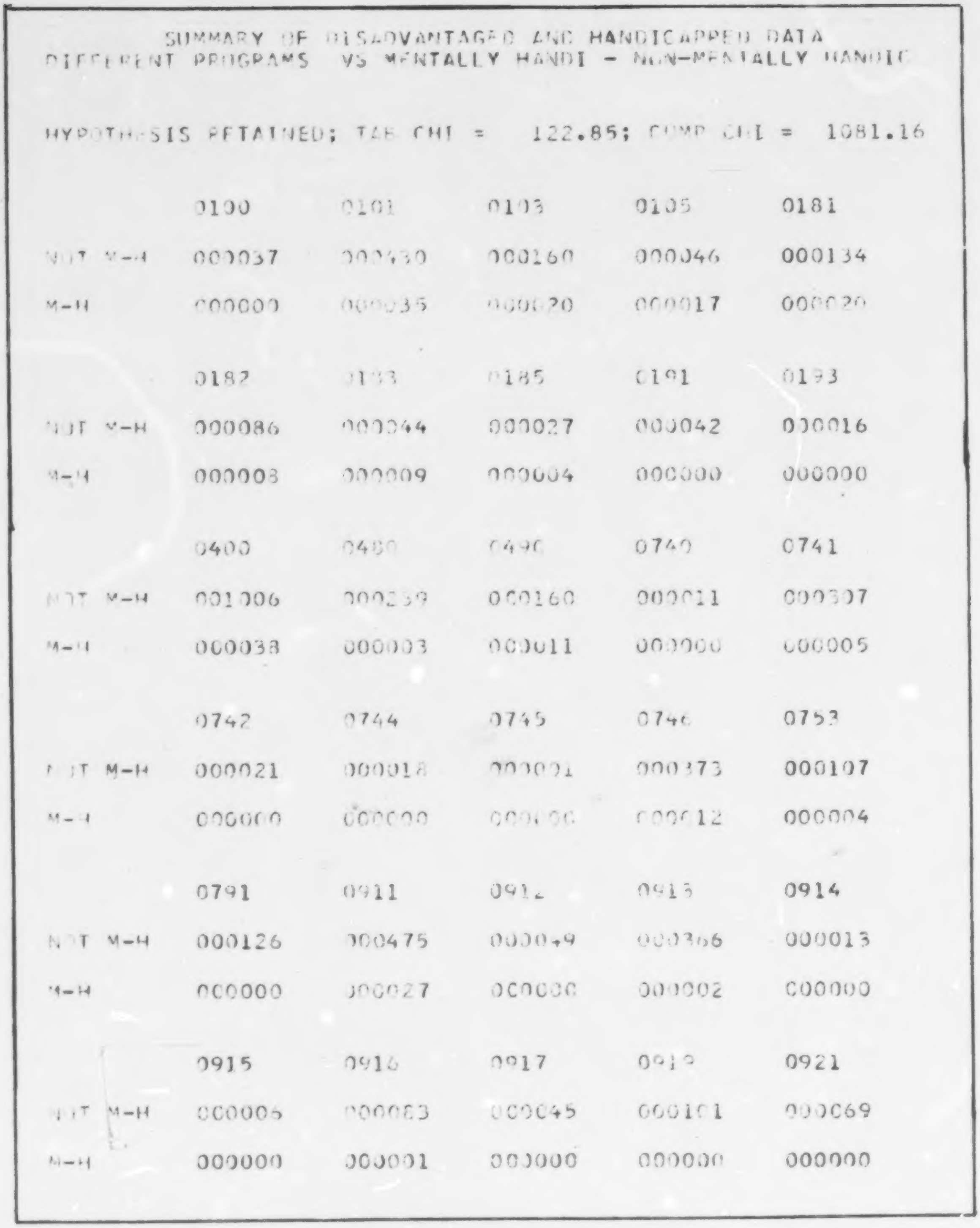
COMPUTER SOFTWARE

The software for this module consists of a single program called "P-H" which is written in Standard American COBOL with a JCL setup written for an IBM 360 50. "P-H" is written in SECTIONS under the control of a call routine named MAIN-LINE SECTION. Figure 104 is the flow chart for "P-H", Figure 105 is the program listing and Figure 106 is the JCL setup.



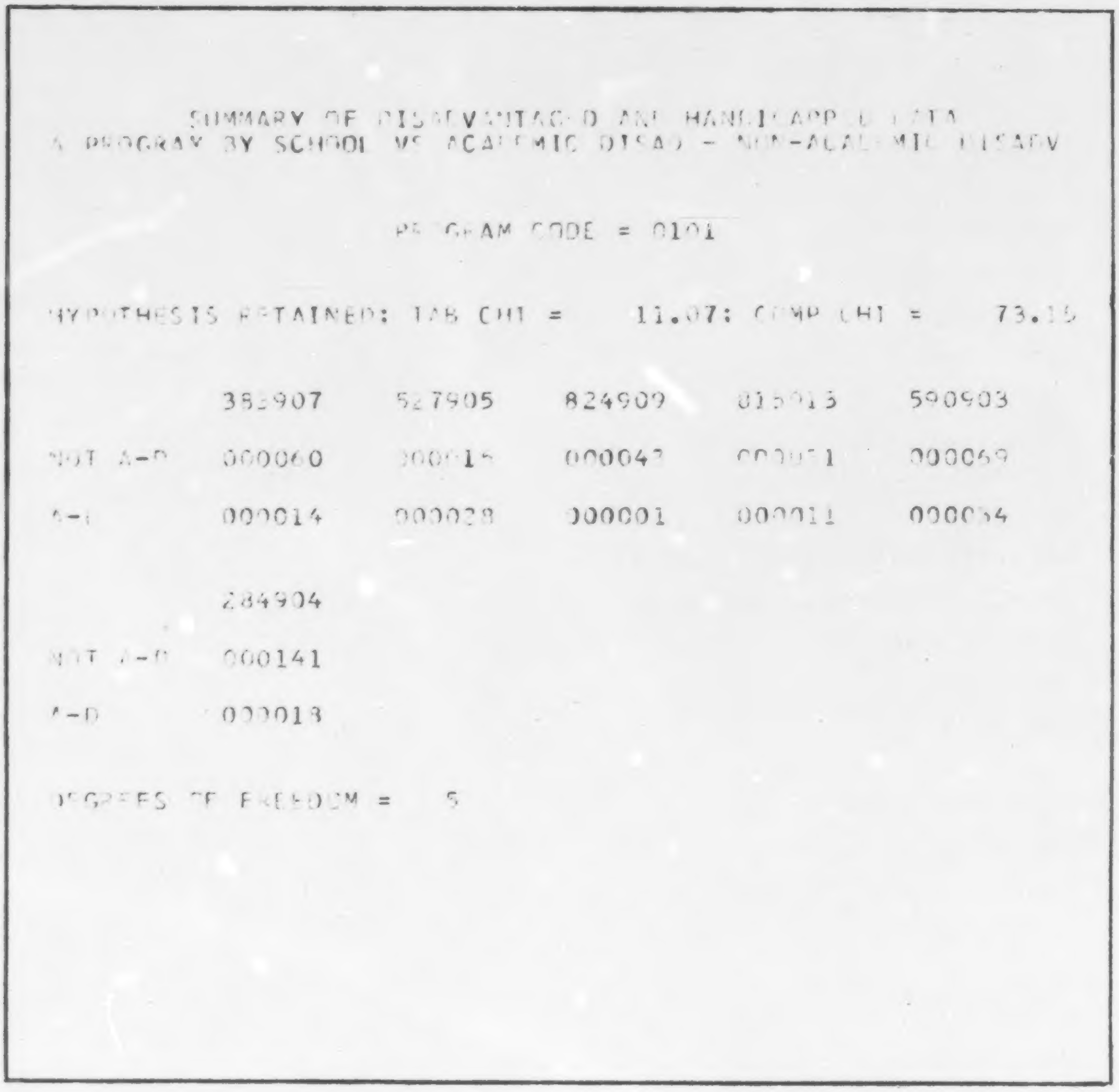
```
          SUMMARY OF DISADVANTAGED AND HANDICAPPED DATA
SCHOOL - POPULATION VS ACADEMIC DISAD - NON-ACADEMIC DISA V

HYPOTHESIS RETAINED: TAB CHI =      3.84; COMP CHI =  1055.[illegible]

            GEN POP    527905

NOT A-D     058507     000322

A-D         002602     000171

DEGREES OF FREEDOM =    1
```

Figure 101: Sample Page of Output Type One



```
            SUMMARY OF DISADVANTAGED AND HANDICAPPED DATA
  DIFFERENT PROGRAMS  VS MENTALLY HANDI - NON-MENTALLY HANDIC

  HYPOTHESIS RETAINED; TAB CHI =   122.85; COMP CHI =  1081.16

              0100      0101      0103      0105      0181

  NOT M-H     000037    000430    000160    000046    000134

  M-H         000000    000035    000020    000017    000020

              0182      0183      0185      0191      0193

  NOT M-H     000086    000044    000027    000042    000016

  M-H         000008    000009    000004    000000    000000

              0400      0480      0490      0740      0741

  NOT M-H     001006    000239    000160    000011    000307

  M-H         000038    000003    000011    000000    000005

              0742      0744      0745      0746      0753

  NOT M-H     000021    000018    000001    000373    000107

  M-H         000000    000000    000000    000012    000004

              0791      0911      0912      0913      0914

  NOT M-H     000126    000475    000049    000366    000013

  M-H         000000    000027    000000    000002    000000

              0915      0916      0917      0919      0921

  NOT M-H     000006    000083    000045    000101    000069

  M-H         000000    000001    000000    000000    000000
```

Figure 102: Sample Page of Output Type Three



```
           SUMMARY OF DISADVANTAGED AND HANDICAPPED DATA
  A PROGRAM BY SCHOOL VS ACADEMIC DISAD - NON-ACADEMIC DISADV

                      PROGRAM CODE = 0101

HYPOTHESIS RETAINED: TAB CHI =     11.07: COMP CHI =     73.15

             383907     527905     824909     815913     590903

NOT A-D      000060     000015     000043     000051     000069

A-D          000014     000028     000001     000011     000054

             284904

NOT A-D      000141

A-D          000018

DEGREES OF FREEDOM =    5
```

Figure 103: Sample Page of Output Type Four

1. Open Files
2. Perform INITIALIZING SECTION
3. Perform READ-DATA SECTION
4. Set up actual cell value table for Hypothesis 1, School (A)
5. Add 1 to A
6. Move data labels to Output Area
7. Perform COMPUTE-CHI SECTION
8. Is A less than 14
9. Move 1 to A
10. Add 1 to R
11. Set up actual cell value table for Hypothesis 2, School (A)
12. Add 1 to A
13. Move data labels to Output Area
14. Perform COMPUTE-CHI SECTION
15. Is A less than 14
16. Move 1 to A
17. Add 1 to R
18. Set up actual cell value table for Hypothesis 3, School (A)
19. Add 1 to A
20. Move data labels to Output Area
21. Perform COMPUTE-CHI SECTION
22. Is A less than 14
23. Move 1 to A
24. Add 1 to R

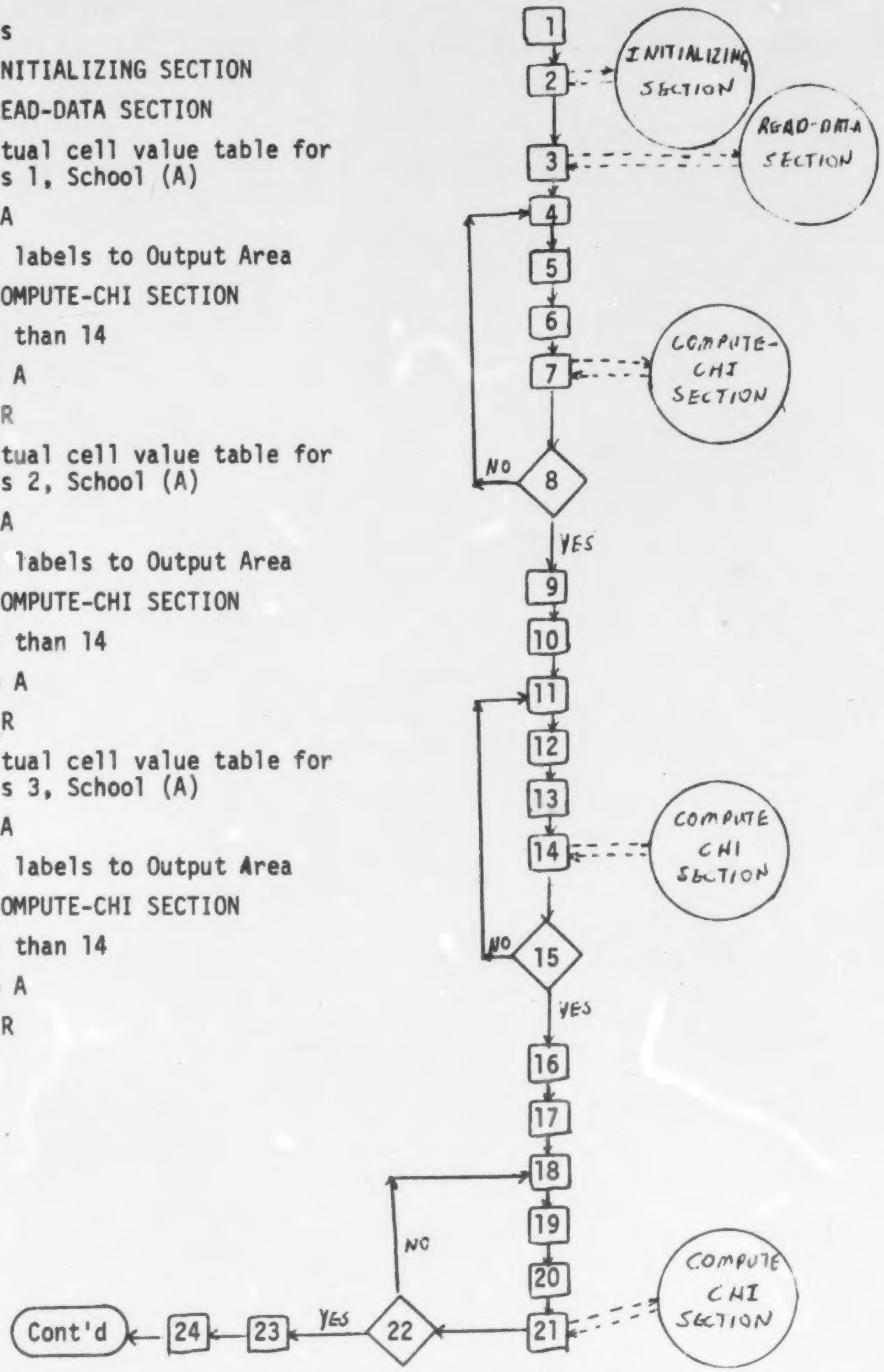


Figure 104 Disadvantaged and Handicapped Module Software Flow Chart (MAIN-LINE SECTION)

25. Set up actual cell values table for Hypothesis 4, School (A)
26. Add 1 to A
27. Move data labels to Output Area
28. Perform COMPUTE-CHI SECTION
29. Is A less than 14
30. Move 1 to A
31. Add 1 to R
32. Set up actual cell value table for Hypothesis 5, School (A)
33. Add 1 to A
34. Move data labels to Output Area
35. Perform COMPUTE-CHI SECTION
36. Is A less than 14
37. Move 1 to A
38. Add 1 to R
39. Set up actual cell value table for Hypothesis 6
40. Move data labels to Output Area
41. Perform COMPUTE-CHI SECTION
42. Add 1 to R
43. Set up actual cell value table for Hypothesis 7
44. Move data labels to Output Area
45. Perform COMPUTE-CHI SECTION
46. Add 1 to R
47. Set up actual cell value table for Hypothesis 8
48. Move data labels to Output Area
49. Perform COMPUTE-CHI SECTION
50. Add 1 to R

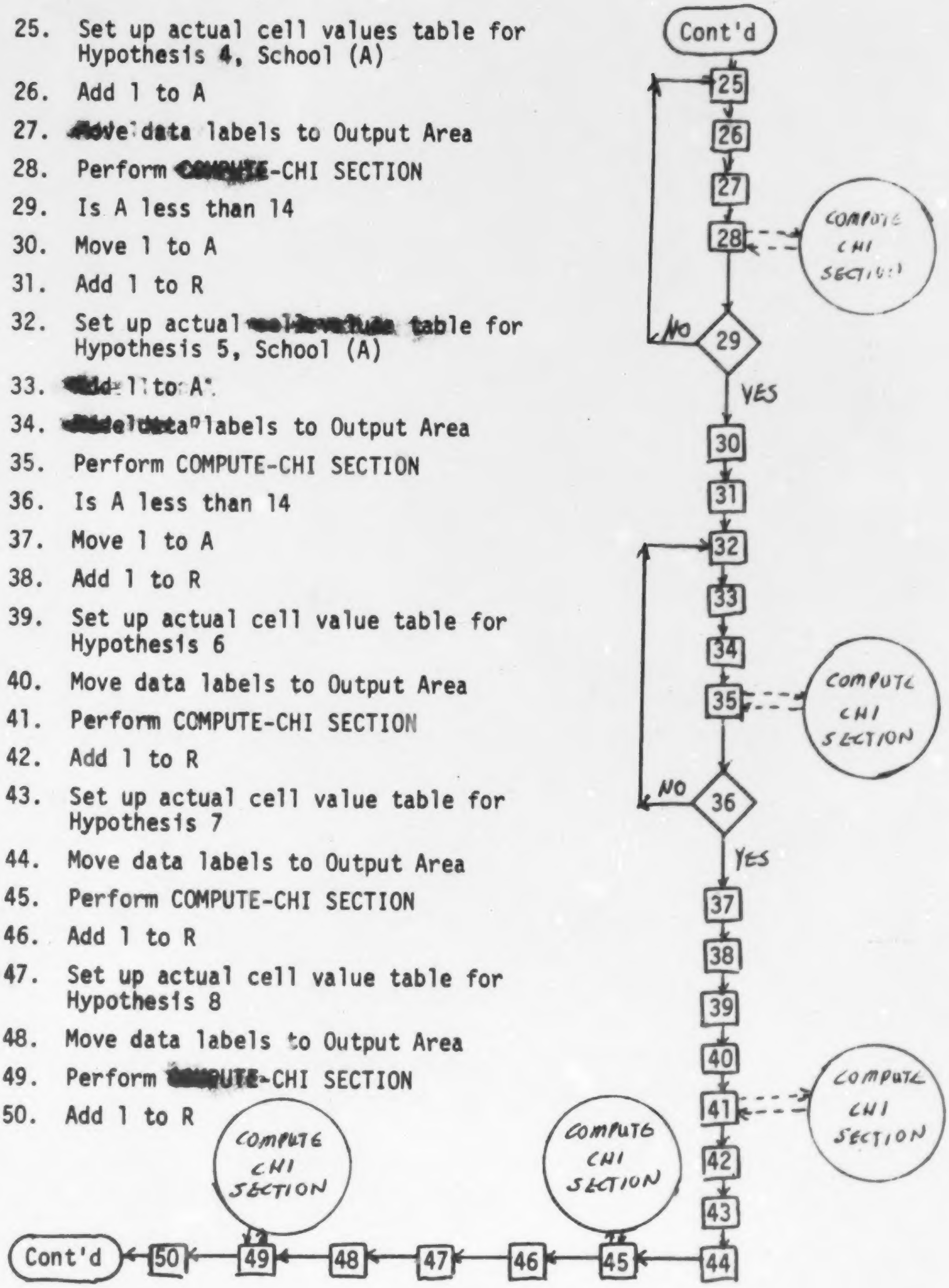


Figure 104. Disadvantaged and Handicapped Module Software Flow Chart (MAIN-LINE SECTION Cont'd)

51. Set up actual cell value table for Hypothesis 9
52. Move data labels to Output Area
53. Perform COMPUTE-CHI SECTION
54. Add 1 to R
55. Set up actual cell values table for Hypothesis 10
56. Move data labels to Output Area
57. Perform COMPUTE-CHI SECTION
58. Add 1 to R
59. Set up actual cell value table for Hypothesis 11, Program (A)
60. Move data labels to Output Area
61. Perform COMPUTE-CHI SECTION
62. Add 1 to A
63. Is A less than 201
64. Move 1 to A
65. Add 1 to R
66. Set up actual cell value table for Hypothesis 12, Program (A)
67. Move data labels to Output Area
68. Perform COMPUTE-CHI SECTION
69. Add 1 to A
70. Is A less than 201
71. Move 1 to A
72. Add 1 to R

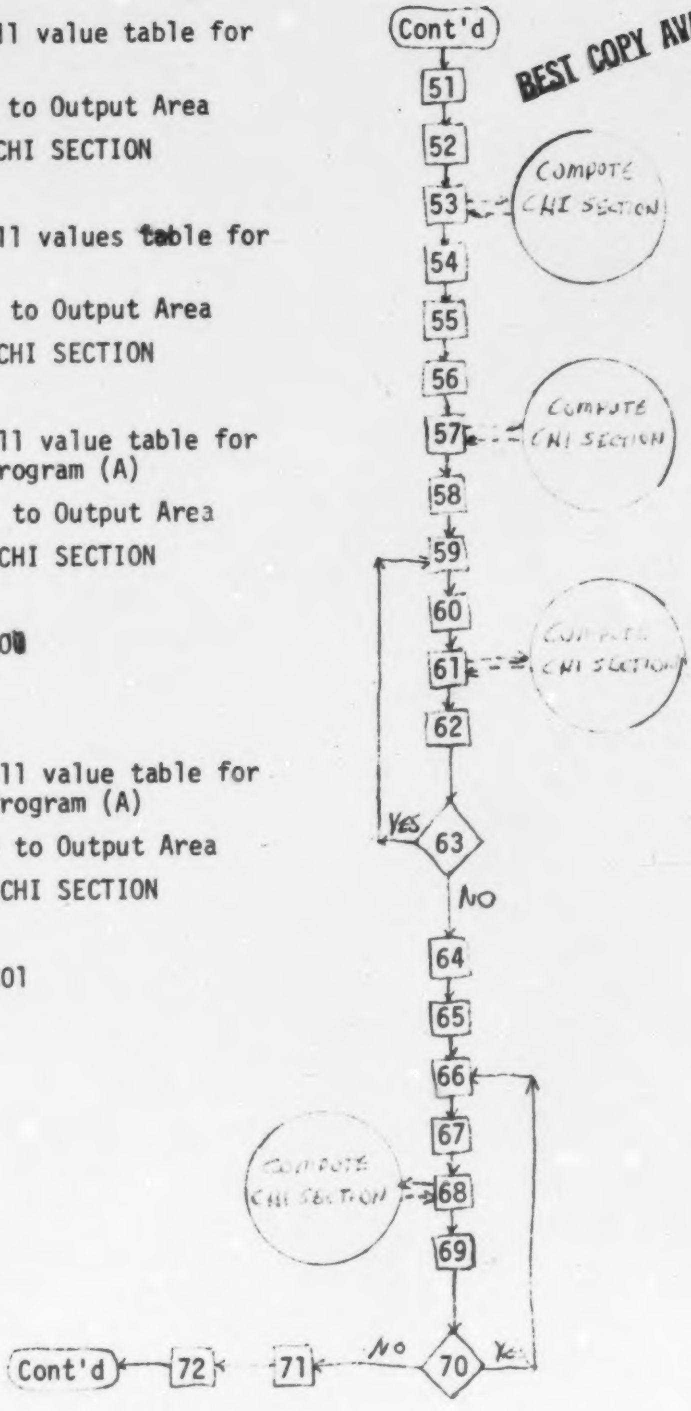


Figure 104: Disadvantaged and Handicapped Module Software Flow Chart (MAIN-LINE SECTION Cont'd)

73. Set up actual cell value Table for Hypothesis 13, Program (A)
74. Move data labels to Output Area
75. Perform COMPUTE-CHI SECTION
76. Add 1 to A
77. Is A less than 201
78. Move 1 to A
79. Add 1 to R
80. Set up actual cell value table for Hypothesis 14, Program (A)
81. Move data labels to Output Area
82. Perform COMPUTE-CHI SECTION
83. Add 1 to A
84. Is A less than 201
85. Move 1 to A
86. Add 1 to R
87. Set up actual cell value table for Hypothesis 15, Program (A)
88. Move data labels to Output Area
89. Perform COMPUTE-CHI SECTION

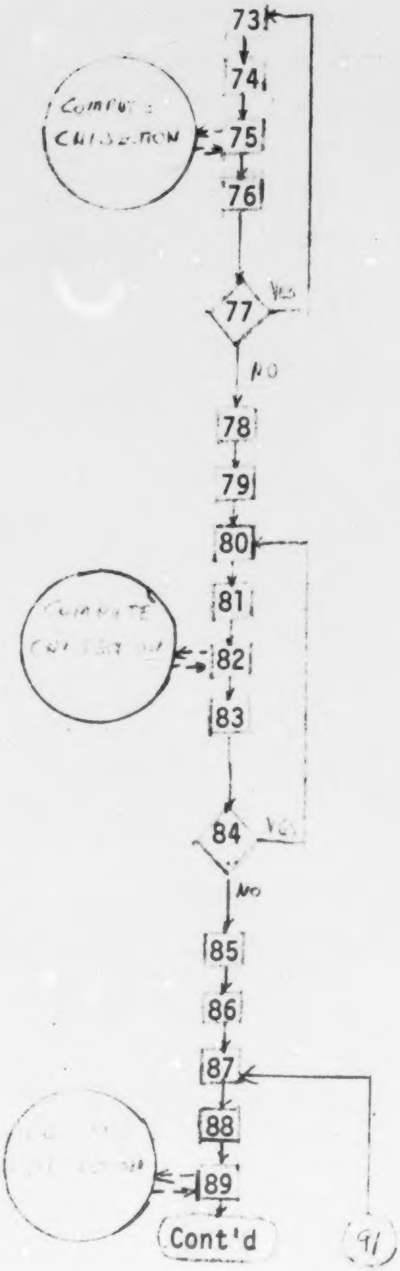


Figure 104: Disadvantaged and Handicapped Module Software Flow Chart (MAINLINE SECTION Cont'd)

90. Add 1 to A
91. Is A less than 201
92. Move 1 to A
93. Add 1 to R
94. Close Files
95. Stop Run

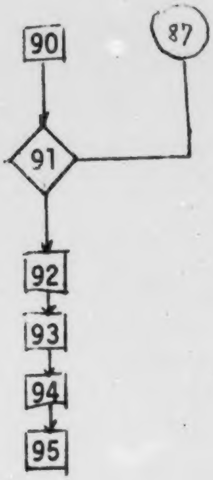


Figure 104: Disadvantaged and Handicapped Module Software Flow Chart (MAINLINE SECTION Cont'd)

1. Move Zeroes to Raw Data Areas
2. Completed for all I and J
3. Move Zeroes to Actual Cell and Expected Cell Areas
4. Completed for all I and J
5. Move Zeroes to Row-Total (1) and Row-Total (2)
6. Move Spaces to Heading Areas
7. Completed for all I and J
8. Reset Subscripts

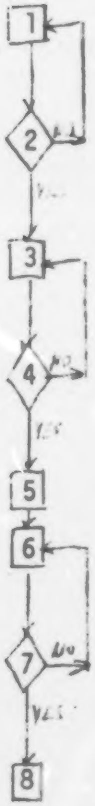


Figure 104: Disadvantaged and Handicapped Module Software Flow Chart (INITIALIZING SECTION)

1. Read School File into table area
2. Read Program File into table area
3. Read Input-File (Student Data)
4. Add 1 to appropriate Disadvantaged, Handicapped and Enrollment Fields by school and program
5. Read in Headers

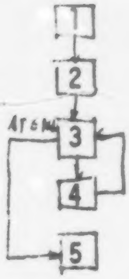


Figure 104: Disadvantaged and Handicapped Module Software Flow Chart (READ-DATA SECTION)

1. Write Page Headers (Find New Page)
2. Move data to Output Line
3. Write data line
4. Need New Page
5. Perform 1 (above)

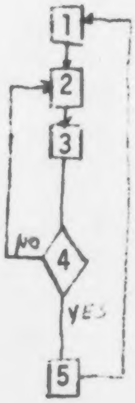


Figure 104: Disadvantaged and Handicapped Module Software Flow Chart (PRINT-RAW-DATA SECTION)

1. Count number of columns in actual cells
2. Is number of columns greater than 1
3. Compute column totals and row totals
4. Are row totals greater than zero
5. Compute expected cell values
6. Compute Chi contributions by cell and sum to Computed Chi Value
7. Determine degrees of Freedom
8. Compute Tabular Chi Value
9. If degrees of freedom is less than 31, replace the computed tabular Chi value with a tabular Chi value from the actual table of Chi Values
10. Move Actual Cell data to Output Line
11. Write Page Headings (After Finding top of New Page)
12. Move Rejected or Retained to Output Area
13. Move row and column headings to Output Area

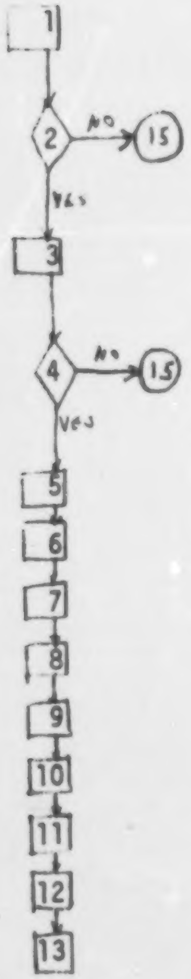


Figure 104: Disadvantaged and Handicapped Module Software Flow Chart (COMPUTE-CHI SECTION)

14. Write data
15. Write Uncomputable Chi Message
16. Move Zeroes to data storage areas
17. Move Spaces to appropriate column and row headings in the output area
18. Move Zeroes to actual and expected cells

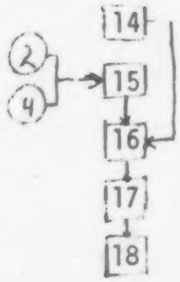
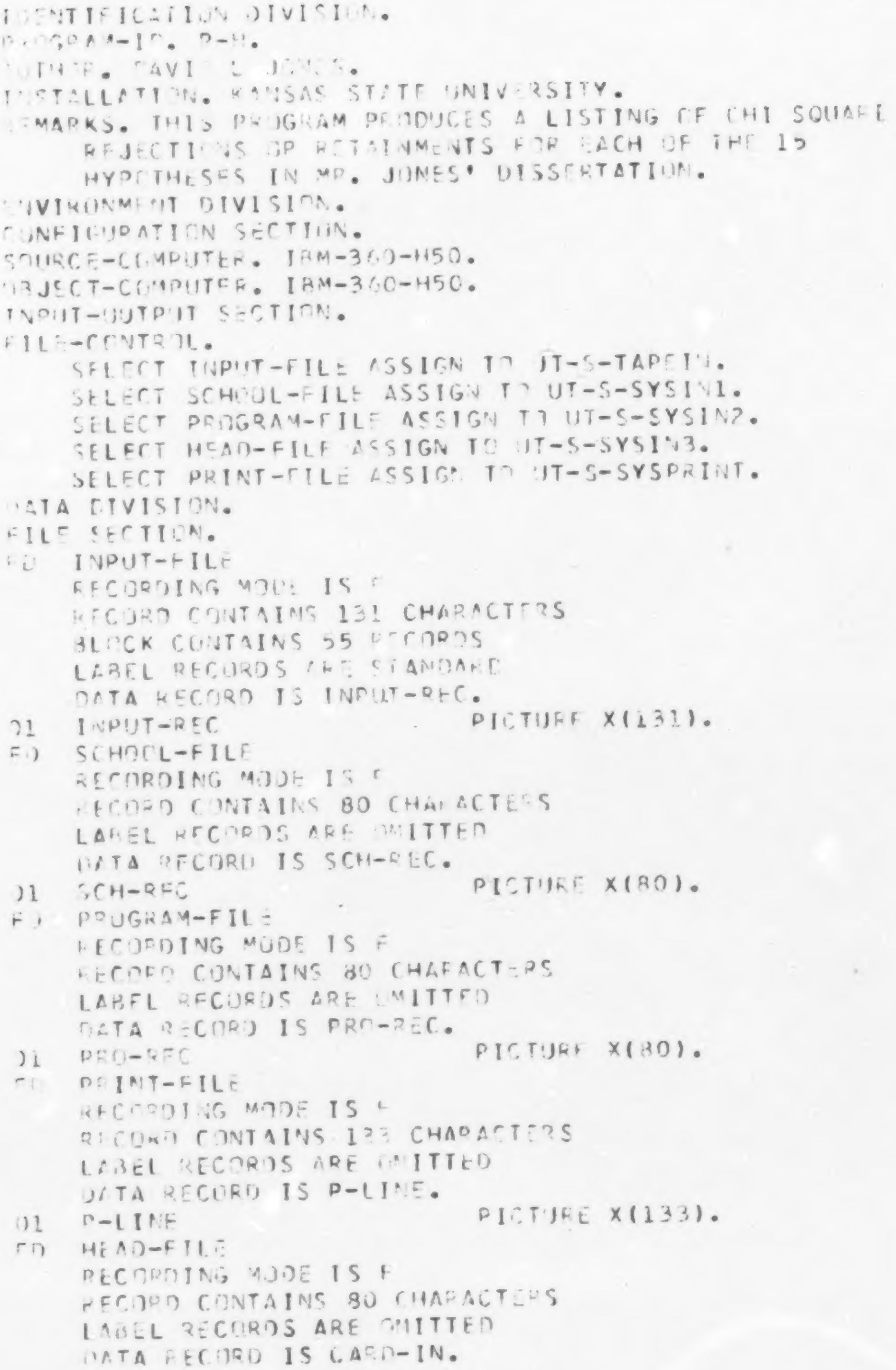


Figure 104: Disadvantaged and Handicapped Module Software Flow Chart (COMPUTE-CHI SECTION)



```
IDENTIFICATION DIVISION.
PROGRAM-ID. P-H.
AUTHOR. DAVID L JONES.
INSTALLATION. KANSAS STATE UNIVERSITY.
REMARKS. THIS PROGRAM PRODUCES A LISTING OF CHI SQUARE
     REJECTIONS OR RETAINMENTS FOR EACH OF THE 15
     HYPOTHESES IN MR. JONES' DISSERTATION.
ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER. IBM-360-H50.
OBJECT-COMPUTER. IBM-360-H50.
INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT INPUT-FILE ASSIGN TO UT-S-TAPEIN.
    SELECT SCHOOL-FILE ASSIGN TO UT-S-SYSIN1.
    SELECT PROGRAM-FILE ASSIGN TO UT-S-SYSIN2.
    SELECT HEAD-FILE ASSIGN TO UT-S-SYSIN3.
    SELECT PRINT-FILE ASSIGN TO UT-S-SYSPRINT.
DATA DIVISION.
FILE SECTION.
FD  INPUT-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 131 CHARACTERS
    BLOCK CONTAINS 55 RECORDS
    LABEL RECORDS ARE STANDARD
    DATA RECORD IS INPUT-REC.
01  INPUT-REC                        PICTURE X(131).
FD  SCHOOL-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS SCH-REC.
01  SCH-REC                          PICTURE X(80).
FD  PROGRAM-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS PRO-REC.
01  PRO-REC                          PICTURE X(80).
FD  PRINT-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 133 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS P-LINE.
01  P-LINE                           PICTURE X(133).
FD  HEAD-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS CARD-IN.
```

Figure 105: Source Listing of P-H

```
 01  CARD-IN                         PICTURE X(80).
 WORKING-STORAGE SECTION.
 01  VARIABLE-AREA.
     02 A                            PICTURE S999 VALUE 1.
     02 B                            PICTURE S999 VALUE 1.
     02 I                            PICTURE S999 VALUE 1.
     02 J                            PICTURE S999 VALUE 1.
     02 K                            PICTURE S999999 VALUE 0.
     02 L                            PICTURE S999 VALUE 1.
     02 M                            PICTURE S999 VALUE 1.
     02 N                            PICTURE S99999 VALUE ZEROES.
     02 P                            PICTURE S999 VALUE ZEROES.
     02 Q                            PICTURE S999 VALUE 1.
     02 TME                          PICTURE S9(8).
     02 TMP                          PICTURE S9(8).
     02 SUM-HOLD                     PICTURE S9(7)V99.
     02 LINE-COUNT                   PICTURE S99 VALUE ZEROES.
     02 PCT-DIS-HAN                  PICTURE S9V99.
     02 NO-COLUMNS                   PICTURE S999 VALUE ZEROES.
     02 CALCULATED-CHI               PICTURE S99999V99 VALUE ZEROES.
     02 TABULAR-CHI                  PICTURE S99999V99.
     02 ROW-NAME-1                   PICTURE X(10).
     02 ROW-NAME-2                   PICTURE X(10).
 01  TABLE-AREA.
     02 SCHOOL OCCURS 14 TIMES.
        03 PROGRAM-TYPE OCCURS 200 TIMES.
           04 ACA-DIS                PICTURE 9999.
           04 NON-WHITE              PICTURE 9999.
           04 ECO-DIS                PICTURE 9999.
           04 PHY-HAN                PICTURE 9999.
           04 MEN-HAN                PICTURE 9999.
           04 TOTAL-DIS-HAN          PICTURE 9999.
           04 TOTAL-ENR              PICTURE 9999.
     02 SCHOOL-CODE OCCURS 14 TIMES.
        03 SCH-CODE                  PICTURE X(6).
        03 GEN-POP                   PICTURE 9(6).
        03 GEN-ACA                   PICTURE 9(6).
        03 GEN-NW                    PICTURE 9(6).
        03 GEN-ECO                   PICTURE 9(6).
        03 GEN-MEN                   PICTURE 9(6).
        03 GEN-PHY                   PICTURE 9(6).
     02 PROGRAM-CODE OCCURS 200 TIMES.
        03 PRG-CODE                  PICTURE X(4).
        03 CHI-VALUES                PICTURE 999V99.
     02 ROW-CELL-ACTUAL OCCURS 2 TIMES.
        03 COLUMN-CELL-ACTUAL OCCURS 200 TIMES.
           04 ACTUAL-CELL            PICTURE 9(6).
     02 ROW-CELL-EXPECTED OCCURS  2 TIMES.
        03 COLUMN-CELL-EXPECTED OCCURS 200 TIMES.
           04 EXPECTED-CELL          PICTURE 9(6)V9999.
```

Figure 105: Source Listing of P-H (Cont)

378

```
       02 ROW-TOTALS OCCURS 2 TIMES.
          03 ROW-TOTAL              PICTURE 9(8)V99.
       02 COLUMN-TOTALS OCCURS 200 TIMES.
          03 COLUMN-TOTAL           PICTURE 9(8)V99.
       02 CHI-HEADER OCCURS 40 TIMES.
          03 CX                     PICTURE X(26).
          03 HEAD-AREAS OCCURS 5 TIMES.
             04 HD-AREA             PICTURE X(10).
       02 CHI-LINE-1 OCCURS 40 TIMES.
          03 CY                     PICTURE X(16).
          03 HEAD-1-LINE            PICTURE X(10).
          03 DATA-AREAS OCCURS 5 TIMES.
             04 ACT-OUT-1           PICTURE X(10).
       02 CHI-LINE-2 OCCURS 40 TIMES.
          03 CZ                     PICTURE X(16).
          03 HEAD-2-LINE            PICTURE X(10).
          03 DATA-AREAS OCCURS 5 TIMES.
             04 ACT-OUT-2           PICTURE X(10).
       02 HEAD OCCURS 15 TIMES.
          03 CC                     PICTURE X(15).
          03 OTHER-DATA             PICTURE X(40).
   01  INPUT-AREA.
       02 FILLER                    PICTURE X(74).
       02 RACE                      PICTURE X.
       02 FILLER                    PICTURE X(8).
       02 SCH-CODE-IN               PICTURE X(6).
       02 FILLER                    PICTURE X(3).
       02 PRO-CODE-IN               PICTURE X(4).
       02 FILLER                    PICTURE X(16).
       02 S                         PICTURE X.
       02 T                         PICTURE X.
       02 U                         PICTURE X.
       02 V                         PICTURE X.
       02 FILLER                    PICTURE X(15).
   01  OUTPUT-AREAS.
       02 MAJOR-HEADER.
          03 CC                     PICTURE X(24) VALUE SPACES.
          03 TITLE-1                PICTURE X(45) VALUE
             'SUMMARY OF DISADVANTAGED AND HANDICAPPED DATA'.
       02 HEAD-2.
          03 CC                     PICTURE X(38) VALUE SPACES.
          03 TITLE-2                PICTURE X(16) VALUE
             'RAW DATA SUMMARY'.
       02 VARIABLE-HEADER           PICTURE X(80).
       02 DISPOSITION-LINE.
          03 CC                     PICTURE X(16) VALUE SPACES.
          03 P1                     PICTURE X(11) VALUE 'HYPOTHESIS '.
          03 STATUS1                PICTURE X(8).
          03 P2                     PICTURE X(12) VALUE ': TAB CHI = '.
          03 TAB-CHI                PICTURE ZZZZZ.99.
          03 TAB-CHI-CHR REDEFINES TAB-CHI  PICTURE X(8).
```

Figure 105: Source Listing of P-H (Cont)

```
        03 P3                       PICTURE X(13) VALUE '; COMP CHI = '.
        03 COM-CHI                  PICTURE ZZZZZ.99.
        03 COM-CHI-CHR REDEFINES COM-CHI  PICTURE X(8).
     02 RAW-DATA-COLUMN-HEADS.
        03 CC                       PICTURE X(19) VALUE SPACES.
        03 P1                       PICTURE X(20) VALUE
           'SCH        PROG       A'.
        03 P2                       PICTURE X(37) VALUE
           'CA   CUL   ECO   MEN   PHY   TOT   ENR   PCT'.
     02 RAW-DATA-OUTPUT-LINE.
        03 CC                       PICTURE X(16) VALUE SPACES.
        03 SCHOOL-OUT               PICTURE X(12).
        03 PROGRAM-OUT              PICTURE X(8).
        03 ACA                      PICTURE ZZZZ.
        03 FILLER                   PICTURE X VALUE SPACES.
        03 CUL                      PICTURE ZZZZ.
        03 FILLER                   PICTURE X VALUE SPACES.
        03 ECO                      PICTURE ZZZZ.
        03 FILLER                   PICTURE X VALUE SPACES.
        03 MEN                      PICTURE ZZZZ.
        03 FILLER                   PICTURE X VALUE SPACES.
        03 PHY                      PICTURE ZZZZ.
        03 FILLER                   PICTURE X VALUE SPACES.
        03 TOT                      PICTURE ZZZZ.
        03 FILLER                   PICTURE X VALUE SPACES.
        03 ENR                      PICTURE ZZZZ.
        03 FILLER                   PICTURE X VALUE SPACES.
        03 PCT                      PICTURE Z.99.
     02 DF-LINE.
        03 CC                       PICTURE X(16) VALUE SPACES.
        03 XXX      PICTURE X(21) VALUE 'DEGREES OF FREEDOM = '.
        03 DF                       PICTURE ZZZ.
     02 CONTRL-LINE.
        03 CC                       PICTURE X(36) VALUE SPACES.
        03 CENTER-PGM               PICTURE X(15) VALUE
        'PROGRAM CODE = '.
        03 CONTRL                   PICTURE XXXX VALUE SPACES.
 PROCEDURE DIVISION.
 MAIN-LINE SECTION.
 NOTE-PARAGRAPH.
```

Figure 105: Source Listing of P-H (Cont)

```
   NOTE:
       *************************************************
       *                                               *
       * THIS SECTION CONTROLS THE PROGRAM AND SETS UP *
       * TABLES FOR CHI SQUARE CALCULATIONS.  THE FIRST *
       * THREE PARAGRAPHS PERFORM STANDARD HOUSEKEEPING *
       * FUNCTIONS: I.E., OPEN FILES AND CALL READ AND *
       * INITIALIZING SECTIONS.  THE FOURTH PARAGRAPH  *
       * CALLS THE SECTION WHICH DUMPS RAW DATA FOR    *
       * CHECKING PURPOSES.   THE NEXT FIVE PARAGRAPHS *
       * COMPUTE 70 CHI'S ANALYZING THE RELATIONSHIPS  *
       * BETWEEN 14 SCHOOL POPULATIONS AND THE GENERAL *
       * POPULATION RELATIVE TO FIVE HANDICAPS OR DIS- *
       * ADVANTAGES.  THE NEXT FIVE PARAGRAPHS COMPUTE *
       * FIVE CHIS ANALYZING THE RELATIONSHIPS BETWEEN *
       * PROGRAM-TYPES RELATIVE TO SERVICE TO FIVE HAN- *
       * DICAPPED OR DISADVANTAGED GROUPS.  THE NEXT FIVE *
       * PARAGRAPHS COMPUTE CHI'S ANALYZING THE RELATION- *
       * SHIPS BETWEEN ALL PROGRAMS AND FIVE HANDICAPS *
       * OR DISADVANTAGES RELATIVE TO PROGRAMS BY      *
       * SCHOOL.  THE FINAL PARAGRAPH SHUTS DOWN PROGRAM *
       *                                               *
       *************************************************.
OPEN-FILES.
   OPEN INPUT INPUT-FILE, SCHOOL-FILE, PROGRAM-FILE, HEAD-FILE:
    OUTPUT PRINT-FILE.
INITIALIZE-TABLES-AND-VARIABLE.
   PERFORM INITIALIZING.
READ-DATA-INTO-TABLES.
   PERFORM READ-DATA.
PRINT-RAW-DATA.
   PERFORM RAW-DATA-PRINT.
COMPUTE-HYP-1.
   ADD ACA-DIS (A, J) TO ACTUAL-CELL (2, 2).
   ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, 2).
   ADD 1 TO J.
   IF J < 201 GO TO COMPUTE-HYP-1.
   MOVE GEN-ACA (A) TO ACTUAL-CELL (2, 1).
   MOVE GEN-POP (A) TO ACTUAL-CELL (1, 1).
   MOVE HEAD (R) TO VARIABLE-HEADER.
   MOVE 'NOT A-D' TO ROW-NAME-1.
   MOVE 'A-D' TO ROW-NAME-2.
   SUBTRACT ACTUAL-CELL (2, 2) FROM ACTUAL-CELL (1, 2).
   SUBTRACT ACTUAL-CELL (2, 1) FROM ACTUAL-CELL (1, 1).
   MOVE SCH-CODE (A) TO HD-AREA (1, 2).
   MOVE 'GEN POP' TO HD-AREA (1, 1).
   MOVE 1 TO J.
   PERFORM COMPUTE-CHI.
   IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-1.
   MOVE 1 TO A.
   ADD 1 TO R.
```

Figure 105: Source Listing of P-H (Cont)

```
COMPUTE-HYP-2.
     ADD NON-WHITE (A, J) TO ACTUAL-CELL (2, 2).
     ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, 2).
     ADD 1 TO J.
     IF J < 201 GO TO COMPUTE-HYP-2.
     MOVE GEN-NW (A) TO ACTUAL-CELL (2, 1).
     MOVE GEN-POP (A) TO ACTUAL-CELL (1, 1).
     MOVE HEAD (R) TO VARIABLE-HEADER.
     MOVE 'NOT C-D' TO ROW-NAME-1.
     MOVE 'C-D' TO ROW-NAME-2.
     SUBTRACT ACTUAL-CELL (2, 2) FROM ACTUAL-CELL (1, 2).
     SUBTRACT ACTUAL-CELL (2, 1) FROM ACTUAL-CELL (1, 1).
     MOVE SCH-CODE (A) TO HD-AREA (1, 2).
     MOVE 'GEN POP' TO HD-AREA (1, 1).
     MOVE 1 TO J.
     PERFORM COMPUTE-CHI.
     IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-2.
     MOVE 1 TO A.
     ADD 1 TO R.
COMPUTE-HYP-3.
     ADD ECO-DIS (A, J) TO ACTUAL-CELL (2, 2).
     ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, 2).
     ADD 1 TO J.
     IF J < 201 GO TO COMPUTE-HYP-3.
     MOVE GEN-ECO (A) TO ACTUAL-CELL (2, 1).
     MOVE GEN-POP (A) TO ACTUAL-CELL (1, 1).
     MOVE HEAD (R) TO VARIABLE-HEADER.
     MOVE 'NOT E-D' TO ROW-NAME-1.
     MOVE 'E-D' TO ROW-NAME-2.
     SUBTRACT ACTUAL-CELL (2, 2) FROM ACTUAL-CELL (1, 2).
     SUBTRACT ACTUAL-CELL (2, 1) FROM ACTUAL-CELL (1, 1).
     MOVE SCH-CODE (A) TO HD-AREA (1, 2).
     MOVE 'GEN POP' TO HD-AREA (1, 1).
     MOVE 1 TO J.
     PERFORM COMPUTE-CHI.
     IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-3.
     MOVE 1 TO A.
     ADD 1 TO R.
COMPUTE-HYP-4.
     ADD MEN-HAN (A, J) TO ACTUAL-CELL (2, 2).
     ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, 2).
     ADD 1 TO J.
     IF J < 201 GO TO COMPUTE-HYP-4.
     MOVE GEN-MEN (A) TO ACTUAL-CELL (2, 1).
     MOVE GEN-POP (A) TO ACTUAL-CELL (1, 1).
     MOVE HEAD (R) TO VARIABLE-HEADER.
     MOVE 'NOT M-H' TO ROW-NAME-1.
     MOVE 'M-H' TO ROW-NAME-2.
     SUBTRACT ACTUAL-CELL (2, 2) FROM ACTUAL-CELL (1, 2).
     SUBTRACT ACTUAL-CELL (2, 1) FROM ACTUAL-CELL (1, 1).
```

Figure 105: Source Listing of P-H (Cont)

```
     MOVE SCH-CODE (A) TO HD-AREA (1, 2).
     MOVE 'GEN POP' TO HD-AREA (1, 1).
     MOVE 1 TO J.
     PERFORM COMPUTE-CHI.
     IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-4.
     MOVE 1 TO A.
     ADD 1 TO R.
 COMPUTE-HYP-5.
     ADD PHY-HAN (A, J) TO ACTUAL-CELL (2, 2).
     ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, 2).
     ADD 1 TO J.
     IF J < 201 GO TO COMPUTE-HYP-5.
     MOVE GEN-PHY (A) TO ACTUAL-CELL (2, 1).
     MOVE GEN-POP (A) TO ACTUAL-CELL (1, 1).
     MOVE HEAD (R) TO VARIABLE-HEADER.
     MOVE 'NOT P-H' TO ROW-NAME-1.
     MOVE 'P-H' TO ROW-NAME-2.
     SUBTRACT ACTUAL-CELL (2, 2) FROM ACTUAL-CELL (1, 2).
     SUBTRACT ACTUAL-CELL (2, 1) FROM ACTUAL-CELL (1, 1).
     MOVE SCH-CODE (A) TO HD-AREA (1, 2).
     MOVE 'GEN POP' TO HD-AREA (1, 1).
     MOVE 1 TO J.
     PERFORM COMPUTE-CHI.
     IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-5.
     MOVE 1 TO A.
     ADD 1 TO R.
 COMPUTE-HYP-6.
     MOVE '0100' TO HD-AREA (1, 1).
     ADD ACA-DIS (A, J) TO ACTUAL-CELL (2, Q).
     ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, Q).
     SUBTRACT ACA-DIS (A, J) FROM ACTUAL-CELL (1, Q).
     IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-6.
     MOVE 1 TO A.
     ADD 1 TO J.
     IF ACTUAL-CELL (1, Q) > 0 ADD 1 TO Q GO TO CONT-6.
     IF ACTUAL-CELL (2, Q) > 0 ADD 1 TO Q.
 CONT-6.
     COMPUTE R = Q / 5.0001 + 1.
     COMPUTE TMP = Q - (R - 1) * 5.
     MOVE PRO-CODE (J) TO HD-AREA (R, TMP).
     IF J < 201 GO TO COMPUTE-HYP-6.
     MOVE 1 TO J.
     MOVE 'NOT A-D' TO ROW-NAME-1.
     MOVE 'A-D' TO ROW-NAME-2.
     MOVE HEAD (R) TO VARIABLE-HEADER.
     PERFORM COMPUTE-CHI.
     MOVE 1 TO Q.
     ADD 1 TO R.
```

Figure 105: Source Listing of P-H (Cont)

```
COMPUTE-HYP-7.
    MOVE '0100' TO HD-AREA (1, 1).
    ADD NON-WHITE (A, J) TO ACTUAL-CELL (2, Q).
    ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, Q).
    SUBTRACT NON-WHITE (A, J) FROM ACTUAL-CELL (1, Q).
    IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-7.
    MOVE 1 TO A.
    ADD 1 TO J.
    IF ACTUAL-CELL (1, Q) > 0 ADD 1 TO Q GO TO CONT-7.
    IF ACTUAL-CELL (2, Q) > 0 ADD 1 TO Q.
CONT-7.
    COMPUTE B = Q / 5.0001 + 1.
    COMPUTE TMP = Q - (B - 1) * 5.
    MOVE PRO-CODE (J) TO HD-AREA (B, TMP).
    IF J < 201 GO TO COMPUTE-HYP-7.
    MOVE 1 TO J.
    MOVE 'NOT N-W' TO ROW-NAME-1.
    MOVE 'N-W' TO ROW-NAME-2.
    MOVE HEAD (R) TO VARIABLE-HEADER.
    PERFORM COMPUTE-CHI.
    MOVE 1 TO Q.
    ADD 1 TO R.
COMPUTE-HYP-8.
    MOVE '0100' TO HD-AREA (1, 1).
    ADD ECO-DIS (A, J) TO ACTUAL-CELL (2, Q).
    ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, Q).
    SUBTRACT ECO-DIS (A, J) FROM ACTUAL-CELL (1, Q).
    IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-8.
    MOVE 1 TO A.
    ADD 1 TO J.
    IF ACTUAL-CELL (1, Q) > 0 ADD 1 TO Q GO TO CONT-8.
    IF ACTUAL-CELL (2, Q) > 0 ADD 1 TO Q.
CONT-8.
    COMPUTE B = Q / 5.0001 + 1.
    COMPUTE TMP = Q - (B - 1) * 5.
    MOVE PRO-CODE (J) TO HD-AREA (B, TMP).
    IF J < 201 GO TO COMPUTE-HYP-8.
    MOVE 1 TO J.
    MOVE 'NOT E-D' TO ROW-NAME-1.
    MOVE 'E-D' TO ROW-NAME-2.
    MOVE HEAD (R) TO VARIABLE-HEADER.
    PERFORM COMPUTE-CHI.
    MOVE 1 TO Q.
    ADD 1 TO R.
COMPUTE-HYP-9.
    MOVE '0100' TO HD-AREA (1, 1).
    ADD MEN-HAN (A, J) TO ACTUAL-CELL (2, Q).
    ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, Q).
    SUBTRACT MEN-HAN (A, J) FROM ACTUAL-CELL (1, Q).
    IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-9.
    MOVE 1 TO A.
```

Figure 105: Source Listing of P-H (Cont)

```
    ADD 1 TO J.
    IF ACTUAL-CELL (1, Q) > 0 ADD 1 TO Q GO TO CONT-9.
    IF ACTUAL-CELL (2, Q) > 0 ADD 1 TO Q.
CONT-9.
    COMPUTE B = Q / 5.0001 + 1.
    COMPUTE TMP = Q - (B - 1) * 5.
    MOVE PRO-CODE (J) TO HD-AREA (B, TMP).
    IF J < 201 GO TO COMPUTE-HYP-9.
    MOVE 1 TO J.
    MOVE 'NOT M-H' TO ROW-NAME-1.
    MOVE 'M-H' TO ROW-NAME-2.
    MOVE HEAD (R) TO VARIABLE-HEADER.
    PERFORM COMPUTE-CHI.
    MOVE 1 TO Q.
    ADD 1 TO R.
COMPUTE-HYP-10.
    MOVE '0100' TO HD-AREA (1, 1).
    ADD PHY-HAN (A, J) TO ACTUAL-CELL (2, Q).
    ADD TOTAL-ENR (A, J) TO ACTUAL-CELL (1, Q).
    SUBTRACT PHY-HAN (A, J) FROM ACTUAL-CELL (1, Q).
    IF A < 14 ADD 1 TO A GO TO COMPUTE-HYP-10.
    MOVE 1 TO A.
    ADD 1 TO J.
    IF ACTUAL-CELL (1, Q) > 0 ADD 1 TO Q GO TO CONT-10.
    IF ACTUAL-CELL (2, Q) > 0 ADD 1 TO Q.
CONT-10.
    COMPUTE B = Q / 5.0001 + 1.
    COMPUTE TMP = Q - (B - 1) * 5.
    MOVE PRO-CODE (J) TO HD-AREA (B, TMP).
    IF J < 201 GO TO COMPUTE-HYP-10.
    MOVE 1 TO J.
    MOVE 'NOT P-H' TO ROW-NAME-1.
    MOVE 'P-H' TO ROW-NAME-2.
    MOVE HEAD (R) TO VARIABLE-HEADER.
    PERFORM COMPUTE-CHI.
    MOVE 1 TO Q.
    ADD 1 TO R.
COMPUTE-HYP-11.
    ADD ACA-DIS (J, A) TO ACTUAL-CELL (2, Q).
    ADD TOTAL-ENR (J, A) TO ACTUAL-CELL (1, Q).
    SUBTRACT ACA-DIS (J, A) FROM ACTUAL-CELL (1, Q).
    COMPUTE B = Q / 5.0001 + 1.
    COMPUTE TMP = Q - (B - 1) * 5.
    IF ACTUAL-CELL (1, Q) > 0 MOVE SCH-CODE (J) TO
     HD-AREA (B, TMP) ADD 1 TO Q GO TO CONT-11.
    IF ACTUAL-CELL (2, Q) > 0 MOVE SCH-CODE (J) TO
     HD-AREA (B, TMP) ADD 1 TO Q.
CONT-11.
    IF J < 14 ADD 1 TO J GO TO COMPUTE-HYP-11.
    MOVE 1 TO J, Q.
    MOVE HEAD (R) TO VARIABLE-HEADER.
```

Figure 105: Source Listing of P-H (Cont)

```
        MOVE 'NOT A=H' TO ROW-NAME-1.
        MOVE 'A=H' TO ROW-NAME-2.
        MOVE PRO-CODE (A) TO CONTROL.
        COMPUTE K = ACTUAL-CELL (1, 1) + ACTUAL-CELL (2, 1).
        IF K = 0 GO TO JUMP-PERFORM-11.
        PERFORM COMPUTE-CHI.
    JUMP-PERFORM-11.
        ADD 1 TO A.
        MOVE ZERO TO K.
        IF A < 201 GO TO COMPUTE-HYP-11.
        ADD 1 TO R.
        MOVE 1 TO A, J, Q.
    COMPUTE-HYP-12.
        ADD NON-WHITE (J, A) TO ACTUAL-CELL (2, Q).
        ADD TOTAL-POP (J, A) TO ACTUAL-CELL (1, Q).
        SUBTRACT NON-WHITE (J, A) FROM ACTUAL-CELL (1, Q).
        COMPUTE N = Q / 5.0001 + 1.
        COMPUTE TMP = Q - (N - 1) * 5.
        IF ACTUAL-CELL (1, Q) > 0 MOVE SCH-CODE (J) TO
         HD-AREA (N, TMP) ADD 1 TO Q GO TO CONT-12.
        IF ACTUAL-CELL (2, Q) > 0 MOVE SCH-CODE (J) TO
         HD-AREA (N, TMP) ADD 1 TO Q.
    CONT-12.
        IF J < 14 ADD 1 TO J GO TO COMPUTE-HYP-12.
        MOVE 1 TO J, Q.
        MOVE HEAD (R) TO VARIABLE-HEADER.
        MOVE 'NOT H=W' TO ROW-NAME-1.
        MOVE 'H=W' TO ROW-NAME-2.
        MOVE PRO-CODE (A) TO CONTROL.
        COMPUTE K = ACTUAL-CELL (1, 1) + ACTUAL-CELL (2, 1).
        IF K = 0 GO TO JUMP-PERFORM-12.
        PERFORM COMPUTE-CHI.
    JUMP-PERFORM-12.
        ADD 1 TO A.
        MOVE ZERO TO K.
        IF A < 201 GO TO COMPUTE-HYP-12.
        ADD 1 TO R.
        MOVE 1 TO A, J, Q.
    COMPUTE-HYP-13.
        ADD ECO-DIS (J, A) TO ACTUAL-CELL (2, Q).
        ADD TOTAL-POP (J, A) TO ACTUAL-CELL (1, Q).
        SUBTRACT ECO-DIS (J, A) FROM ACTUAL-CELL (1, Q).
        COMPUTE N = Q / 5.0001 + 1.
        COMPUTE TMP = Q - (N - 1) * 5.
        IF ACTUAL-CELL (1, Q) > 0 MOVE SCH-CODE (J) TO
         HD-AREA (N, TMP) ADD 1 TO Q GO TO CONT-13.
        IF ACTUAL-CELL (2, Q) > 0 MOVE SCH-CODE (J) TO
         HD-AREA (N, TMP) ADD 1 TO Q.
```

Figure 105: Source Listing of P-H (Cont)

```
CONT-13.
    IF J < 14 ADD 1 TO J GO TO COMPUTE-HYP-13.
    MOVE 1 TO J, Q.
    MOVE HEAD (R) TO VARIABLE-HEADER.
    MOVE 'NOT E-D' TO ROW-NAME-1.
    MOVE 'E-D' TO ROW-NAME-2.
    MOVE PRO-CODE (A) TO CONTRL.
    COMPUTE K = ACTUAL-CELL (1, 1) + ACTUAL-CELL (2, 1).
    IF K = 0 GO TO JUMP-PERFORM-13.
    PERFORM COMPUTE-CHI.
JUMP-PERFORM-13.
    ADD 1 TO A.
    MOVE ZERO TO K.
    IF A < 201 GO TO COMPUTE-HYP-13.
    ADD 1 TO R.
    MOVE 1 TO A, J, Q.
COMPUTE-HYP-14.
    ADD MEN-HAN (J, A) TO ACTUAL-CELL (2, Q).
    ADD TOTAL-ENR (J, A) TO ACTUAL-CELL (1, Q).
    SUBTRACT MEN-HAN (J, A) FROM ACTUAL-CELL (1, Q).
    COMPUTE B = Q / 5.0001 + 1.
    COMPUTE TMP = Q - (B - 1) * 5.
    IF ACTUAL-CELL (1, Q) > 0 MOVE SCH-CODE (J) TO
     HO-AREA (B, TMP) ADD 1 TO Q GO TO CONT-14.
    IF ACTUAL-CELL (2, Q) > 0 MOVE SCH-CODE (J) TO
     HO-AREA (B, TMP) ADD 1 TO Q.
CONT-14.
    IF J < 14 ADD 1 TO J GO TO COMPUTE-HYP-14.
    MOVE 1 TO J, Q.
    MOVE HEAD (R) TO VARIABLE-HEADER.
    MOVE 'NOT M-H' TO ROW-NAME-1.
    MOVE 'M-H' TO ROW-NAME-2.
    MOVE PRO-CODE (A) TO CONTRL.
    COMPUTE K = ACTUAL-CELL (1, 1) + ACTUAL-CELL (2, 1).
    IF K = 0 GO TO JUMP-PERFORM-14.
    PERFORM COMPUTE-CHI.
JUMP-PERFORM-14.
    ADD 1 TO A.
    MOVE ZERO TO K.
    IF A < 201 GO TO COMPUTE-HYP-14.
    ADD 1 TO R.
    MOVE 1 TO A, J, Q.
COMPUTE-HYP-15.
    ADD PHY-HAN (J, A) TO ACTUAL-CELL (2, Q).
    ADD TOTAL-ENR (J, A) TO ACTUAL-CELL (1, Q).
    SUBTRACT PHY-HAN (J, A) FROM ACTUAL-CELL (1, Q).
    COMPUTE B = Q / 5.0001 + 1.
    COMPUTE TMP = Q - (B - 1) * 5.
    IF ACTUAL-CELL (1, Q) > 0 MOVE SCH-CODE (J) TO
     HO-AREA (B, TMP) ADD 1 TO Q GO TO CONT-15.
    IF ACTUAL-CELL (2, Q) > 0 MOVE SCH-CODE (J) TO
     HO-AREA (B, TMP) ADD 1 TO Q.
```

Figure 105: Source Listing of P-H (Cont)

```
CONT-15.
    IF J < 14 ADD 1 TO J GO TO COMPUTE-HYP-15.
    MOVE 1 TO J, Q.
    MOVE HEAD (P) TO VARIABLE-HEADER.
    MOVE 'NOT P-H' TO RUN-NAME-1.
    MOVE 'P-H' TO RUN-NAME-2.
    MOVE PRO-CODE (A) TO CONTRL.
    COMPUTE K = ACTUAL-CELL (1, 1) + ACTUAL-CELL (2, 1).
    IF K = 0 GO TO JUMP-PERFORM-15.
    PERFORM COMPUTE-CHI.
JUMP-PERFORM-15.
    ADD 1 TO A.
    MOVE ZERO TO K.
    IF A < 201 GO TO COMPUTE-HYP-15.
    ADD 1 TO P.
    MOVE 1 TO A, J, Q.
WRAP-UP.
    CLOSE INPUT-FILE, SCHOOL-FILE, PROGRAM-FILE, HEAD-FILE,
     PRINT-FILE.
    STOP RUN.
INITIALIZING SECTION.
NOTE-PARAGRAPH.
    NOTE:

          ********************************************
          *
          * THIS SECTION MOVES ZEROES, BLANKS, ETC. INTO
          * APPROPRIATE DATA DIVISION VARIABLES.
          *
          ********************************************.
PARAGRAPH-1.
    MOVE ZEROES TO ACA-DIS (I, J), NON-WHITE (I, J),
     ECO-DIS (I, J), PHY-HAN (I, J), MEN-HAN (I, J),
     TOTAL-DIS-HAN (I, J), TOTAL-ENR (I, J).
    ADD 1 TO J.
    IF J < 201 GO TO PARAGRAPH-1.
    MOVE 1 TO J.
    ADD 1 TO I.
    IF I < 15 GO TO PARAGRAPH-1.
    MOVE 1 TO I.
PARAGRAPH-2.
    MOVE ZEROES TO ACTUAL-CELL (I, J), EXPECTED-CELL (I, J),
     COLUMN-TOTAL (J).
    ADD 1 TO I.
    IF I < 3 GO TO PARAGRAPH-2.
    MOVE 1 TO I.
    ADD 1 TO J.
    IF J < 201 GO TO PARAGRAPH-2.
    MOVE 1 TO J.
    MOVE ZEROES TO ROW-TOTAL (1), ROW-TOTAL (2).
```

Figure 105: Source Listing of P-H (Cont)

```
PARAGRAPH-3.
    MOVE SPACES TO CX (J), CY (J), CZ (J), HD-AREA (J, I)
     HEAD-1-LINE (J), HEAD-2-LINE (J), ACT-OUT-1 (J, I),
     ACT-OUT-2 (J, I).
    ADD 1 TO J.
    IF J < 41 GO TO PARAGRAPH-3.
    MOVE 1 TO J.
    ADD 1 TO I.
    IF I < 6 GO TO PARAGRAPH-3.
    MOVE 1 TO I.
READ-DATA SECTION.
NOTE-PARAGRAPH.
    NOTE:

         ***************************************************
         *                                                 *
         * THIS SECTION READS INPUT DATA FOR CALCULATIONS. *
         * THE FIRST PARAGRAPH READS THE SCHOOL FILE WHICH *
         * CONTAINS ALL POSSIBLE SCHOOL CODES.  THE SECOND *
         * PARAGRAPH READS THE PROGRAM FILE WHICH CONTAINS *
         * ALL POSSIBLE PROGRAM CODES.  THE THIRD, FOURTH, *
         * FIFTH, SIXTH AND SEVENTH PARAGRAPHS READ THE    *
         * INPUT FILE WHICH CONTAINS STUDENT DATA AND      *
         * PREPARES A MATRIX OF DATA BY SCHOOL, PROGRAM    *
         * AND TYPES OF STUDENTS.  THE EIGHTH FILE READS   *
         * PAGE HEADERS FOR OUTPUT REPORTS.                *
         *                                                 *
         ***************************************************.
PARAGRAPH-ONE.
    READ SCHOOL-FILE INTO SCHOOL-CODE (I) AT END MOVE 1 TO I
      GO TO PARAGRAPH-TWO.
    ADD 1 TO I.
    GO TO PARAGRAPH-ONE.
PARAGRAPH-TWO.
    READ PROGRAM-FILE INTO PROGRAM-CODE (J) AT END MOVE 1 TO J
     GO TO PARAGRAPH-THREE.
    ADD 1 TO J.
    GO TO PARAGRAPH-TWO.
PARAGRAPH-THREE.
    READ INPUT-FILE AT END MOVE ' ERROR IN INPUT TAPE' TO
     P-LINE, WRITE P-LINE AFTER POSITIONING 0 LINES, STOP RUN.
PARAGRAPH-FOUR.
    READ INPUT-FILE INTO INPUT-AREA AT END GO TO
     PARAGRAPH-EIGHT.
PARAGRAPH-FIVE.
    IF SCH-CODE-IN = SCH-CODE (I) GO TO PARAGRAPH-SIX.
    ADD 1 TO I.
    IF I > 14 MOVE 1 TO I GO TO PARAGRAPH-FOUR.
    GO TO PARAGRAPH-FIVE.
PARAGRAPH-SIX.
    IF PRO-CODE-IN = PRO-CODE (J) GO TO PARAGRAPH-SEVEN.
    ADD 1 TO J.
```

Figure 105: Source Listing of P-H (Cont)

```
    IF J > 200 MOVE 1 TO I, J, GO TO PARAGRAPH-FOUR.
    GO TO PARAGRAPH-SIX.
PARAGRAPH-SEVEN.
    ADD 1 TO TOTAL-ENR (I, J).
    IF RACE NOT = '8' ADD 1 TO NON-WHITE (I, J).
    IF S = '1' ADD 1 TO TOTAL-DIS-HAN (I, J).
    IF T = '1' ADD 1 TO ECO-DIS (I, J).
    IF T = '2' ADD 1 TO ACA-DIS (I, J).
    IF T = '3' ADD 1 TO ACA-DIS (I, J), ECO-DIS (I, J).
    IF U > '0' ADD 1 TO PHY-HAN (I, J).
    IF V > '0' ADD 1 TO MEN-HAN (I, J).
    IF RACE = '8' MOVE 1 TO I, J, GO TO PARAGRAPH-FOUR.
    IF S NOT = '1' ADD 1 TO TOTAL-DIS-HAN (I, J).
    MOVE 1 TO I, J.
    GO TO PARAGRAPH-FOUR.
PARAGRAPH-EIGHT.
    READ HEAD-FILE INTO HEAD (J) AT END GO TO PARAGRAPH-NINE.
    ADD 1 TO J.
    GO TO PARAGRAPH-EIGHT.
PARAGRAPH-NINE.
    MOVE 1 TO J.
RAW-DATA-PRINT SECTION.
NOTE-PARAGRAPH.
    NOTE:

        ***********************************************
        *                                             *
        * THIS SECTION PRINTS RAW DATA BY SCHOOL BY PROGRAM *
        * FROM THE DATA MATRIX.  PARAGRAPH ONE WRITES      *
        * HEADINGS.  PARAGRAPH TWO MOVES DATA TO A STANDARD *
        * OUTPUT AREA AND PRINTS THE DATA.  PARAGRAPH THREE *
        * AND FOUR SET UP A LOOP AND PARAGRAPH FIVE IS AN   *
        * EXIT PARAGRAPH.                                 *
        *                                             *
        ***********************************************.
PAR-1.
    WRITE P-LINE FROM MAJOR-HEADER AFTER POSITIONING 0 LINES.
    WRITE P-LINE FROM HEAD-2 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM RAW-DATA-COLUMN-HEADS AFTER POSITIONING
     3 LINES.
    ADD 11 TO LINE-COUNT.
PAR-2.
    IF TOTAL-ENR (I, J) = ZEROES GO TO PAR-3.
    MOVE PRO-CODE (J) TO PROGRAM-OUT.
    MOVE SCH-CODE (I) TO SCHOOL-OUT.
    MOVE ACA-DIS (I, J) TO ACA.
    MOVE ECO-DIS (I, J) TO ECO.
    MOVE NON-WHITE (I, J) TO CUL.
    MOVE MEN-HAN (I, J) TO MEN.
    MOVE PHY-HAN (I, J) TO PHY.
    MOVE TOTAL-ENR (I, J) TO ENR.
    MOVE TOTAL-DIS-HAN (I. J) TO TOT.
```

Figure 105: Source Listing of P-H (Cont)

```
    COMPUTE PCT-DIS-HAN = TOTAL-DIS-HAN (I, J) /
     TOTAL-ENR (I, J).
    MOVE PCT-DIS-HAN TO PCT.
    WRITE P-LINE FROM RAW-DATA-OUTPUT-LINE AFTER POSITIONING
     2 LINES.
    ADD 2 TO LINE-COUNT.
    IF LINE-COUNT > 38 MOVE 0 TO LINE-COUNT, PERFORM PAR-1.
PAR-3.
    ADD 1 TO J.
    IF J > 200 MOVE 1 TO J GO TO PAR-4.
    GO TO PAR-2.
PAR-4.
    ADD 1 TO I.
    IF I > 14 MOVE 1 TO I, J, GO TO PAR-5.
    GO TO PAR-2.
PAR-5.
    MOVE 0 TO LINE-COUNT.
COMPUTE-CHI SECTION.
NOTE-PARAGRAPH.
    NOTE:

             **************************************************
             *                                                *
             * THIS SECTION COMPUTES TABULAR AND CALCULATED CHI *
             * SQUARE VALUES FOR ALL HYPOTHESES IN THE JONES  *
             * DISSERTATION.  BEFORE ANY CHI VALUE CAN BE COM- *
             * PUTED, ACTUAL CELL VALUES AND COLUMN-ROW IDEN- *
             * TIFICATION MUST BE PROVIDED. THE FIRST PARAGRAPH *
             * COMPUTES THE DEGREES OF FREEDOM PLUS 1 WHICH IS *
             * THE NUMBER OF COLUMNS (THE NUMBER OF ROWS IS   *
             * ALWAYS 2). THE SECOND PARAGRAPH COMPUTES COLUMN *
             * AND ROW TOTALS AS WELL AS N.  (IF THERE IS ONLY *
             * ONE COLUMN OR IF EITHER ROW TOTALS ZERO, THE   *
             * CHI VALUE IS UNCOMPUTABLE AND A BRANCH OCCURS.) *
             * THE THIRD PARAGRAPH COMPUTES EXPECTED CELL     *
             * VALUES.  THE FOURTH PARAGRAPH COMPUTES CELL    *
             * CONTRIBUTIONS AND THE CALCULATED CHI.  THE FIFTH *
             * PARAGRAPH COMPUTES THE TABULAR CHI.  THE SIXTH *
             * PARAGRAPH MOVES CELL DATA TO PRINT LINES.  THE *
             * SEVENTH PARAGRAPH WRITES HEADING DATA FOR CHI  *
             * CALCULATIONS.  THE EIGHTH-PARAGRAPH WRITES CELL *
             * DATA.  THE NINTH-PARAGRAPH HANDLES UNCOMPUTABLE *
             * CHIS.  THE TENTH, ELEVENTH AND TWELFTH PARAGRAPHS*
             * RE-INITIALIZE VARIABLES.                       *
             *                                                *
             **************************************************.
FIRST-PARAGRAPH.
    IF ACTUAL-CELL (1, J) > 0 ADD 1 TO NO-COLUMNS, J: GO TO
     FIRST-PARAGRAPH.
    IF ACTUAL-CELL (2, J) > 0 ADD 1 TO NO-COLUMNS, J: GO TO
     FIRST-PARAGRAPH.
```

Figure 105: Source Listing of P-H (Cont)

```
           MOVE 1 TO J.
           IF NO-COLUMNS NOT > 1 GO TO NINTH-PARAGRAPH.
       SECOND-PARAGRAPH.
           COMPUTE ROW-TOTAL (I) = ROW-TOTAL (I) + ACTUAL-CELL (I, J).
           COMPUTE COLUMN-TOTAL (J) = COLUMN-TOTAL (J) +
            ACTUAL-CELL (I, J).
           COMPUTE N = N + ACTUAL-CELL (I, J).
           ADD 1 TO J.
           IF J NOT > NO-COLUMNS GO TO SECOND-PARAGRAPH OTHERWISE
            MOVE 1 TO J.
           IF I < 2 ADD 1 TO I GO TO SECOND-PARAGRAPH OTHERWISE
            MOVE 1 TO I.
           IF ROW-TOTAL (1) NOT > 0 GO TO NINTH-PARAGRAPH.
           IF ROW-TOTAL (2) NOT > 0 GO TO NINTH-PARAGRAPH.
       THIRD-PARAGRAPH.
           COMPUTE EXPECTED-CELL (I, J) = ROW-TOTAL (I) *
            COLUMN-TOTAL (J) / N.
           ADD 1 TO J.
           IF J NOT > NO-COLUMNS GO TO THIRD-PARAGRAPH OTHERWISE
            MOVE 1 TO J.
           IF I < 2 ADD 1 TO I: GO TO THIRD-PARAGRAPH OTHERWISE
            MOVE 1 TO I.
       FOURTH-PARAGRAPH.
           COMPUTE SUM-HOLD = (ACTUAL-CELL (I, J) -
           EXPECTED-CELL (I, J)) ** 2.
           COMPUTE CALCULATED-CHI = CALCULATED-CHI + SUM-HOLD /
            EXPECTED-CELL (I, J).
           ADD 1 TO J.
           IF J NOT > NO-COLUMNS GO TO FOURTH-PARAGRAPH OTHERWISE
            MOVE 1 TO J.
           IF I < 2 ADD 1 TO I: GO TO FOURTH-PARAGRAPH OTHERWISE
            MOVE 1 TO I.
       FIFTH-PARAGRAPH.
           COMPUTE P = NO-COLUMNS - 1.
           COMPUTE TABULAR-CHI = 0.5 *
            (1.639 + ((2 * (NO-COLUMNS - 1)) - 1) ** 0.5) ** 2.
           IF NO-COLUMNS < 31 MOVE CHI-VALUES (P) TO TABULAR-CHI.
       SIXTH-PARAGRAPH.
           COMPUTE TME = J - (L - 1) * 5.
           MOVE ACTUAL-CELL (1, J) TO ACT-OUT-1 (L, TME).
           COMPUTE TME = J - (L - 1) * 5.
           MOVE ACTUAL-CELL (2, J) TO ACT-OUT-2 (L, TME).
           COMPUTE L = J / 5 + 1.
           IF J < NO-COLUMNS ADD 1 TO J GO TO SIXTH-PARAGRAPH.
           MOVE 1 TO L.
       SEVENTH-PARAGRAPH.
           WRITE P-LINE FROM MAJOR-HEADER AFTER POSITIONING 0 LINES.
           WRITE P-LINE FROM VARIABLE-HEADER AFTER POSITIONING 1 LINES.
```

Figure 105: Source Listing of P-H (Cont)

```
    IF CONTRL NOT = SPACES WRITE P-LINE FROM CONTRL-LINE
     AFTER POSITIONING 3 LINES.
    IF TABULAR-CHI > CALCULATED-CHI MOVE 'REJECTED' TO STATUS1
     OTHERWISE MOVE 'RETAINED' TO STATUS1.
    MOVE TABULAR-CHI TO TAB-CHI.
    MOVE CALCULATED-CHI TO COM-CHI.
    WRITE P-LINE FROM DISPOSITION-LINE AFTER POSITIONING 3 LINES.
EIGHTH-PARAGRAPH.
    MOVE ROW-NAME-1 TO HEAD-1-LINE (L).
    MOVE ROW-NAME-2 TO HEAD-2-LINE (L).
    WRITE P-LINE FROM CHI-HEADER (L) AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM CHI-LINE-1 (L) AFTER POSITIONING 2 LINES.
    WRITE P-LINE FROM CHI-LINE-2 (L) AFTER POSITIONING 2 LINES.
    COMPUTE J = J - 5.
    IF J > 0 ADD 1 TO L GO TO EIGHTH-PARAGRAPH.
    SUBTRACT 1 FROM NO-COLUMNS GIVING DF.
    WRITE P-LINE FROM DF-LINE AFTER POSITIONING 3 LINES.
    MOVE 1 TO L, J.
    GO TO TENTH-PARAGRAPH.
NINTH-PARAGRAPH.
    WRITE P-LINE FROM MAJOR-HEADER AFTER POSITIONING 0 LINES.
    WRITE P-LINE FROM VARIABLE-HEADER AFTER POSITIONING 1 LINES.
    IF CONTRL NOT = SPACES WRITE P-LINE FROM CONTRL-LINE
     AFTER POSITIONING 3 LINES.
    MOVE 'UNCOMPUT' TO STATUS1.
    MOVE 'N/A' TO TAB-CHI-CHR, COM-CHI-CHR.
    WRITE P-LINE FROM DISPOSITION-LINE AFTER POSITIONING 3 LINES.
TENTH-PARAGRAPH.
    MOVE 1 TO I, J, L.
    MOVE SPACES TO ROW-NAME-1, ROW-NAME-2, STATUS1.
    MOVE ZEROES TO CALCULATED-CHI, TABULAR-CHI, N, ROW-TOTAL (1)
     ROW-TOTAL (2), TAB-CHI, COM-CHI, NO-COLUMNS, DF.
ELEVENTH-PARAGRAPH.
    MOVE ZEROES TO ACTUAL-CELL (1, J), ACTUAL-CELL (2, J),
     EXPECTED-CELL (1, J), EXPECTED-CELL (2, J),
     COLUMN-TOTAL (J).
    IF J < 200 ADD 1 TO J GO TO ELEVENTH-PARAGRAPH OTHERWISE
     MOVE 1 TO J.
TWELFTH-PARAGRAPH.
    MOVE SPACES TO ACT-OUT-1 (I, J), ACT-OUT-2 (I, J),
     HC-AREA (I, J).
    IF J < 6 ADD 1 TO J GO TO TWELFTH-PARAGRAPH OTHERWISE
     MOVE 1 TO J.
    IF I < 40 ADD 1 TO I GO TO TWELFTH-PARAGRAPH OTHERWISE
     MOVE 1 TO I, J.
```

Figure 105: Source Listing of P-H (Cont)

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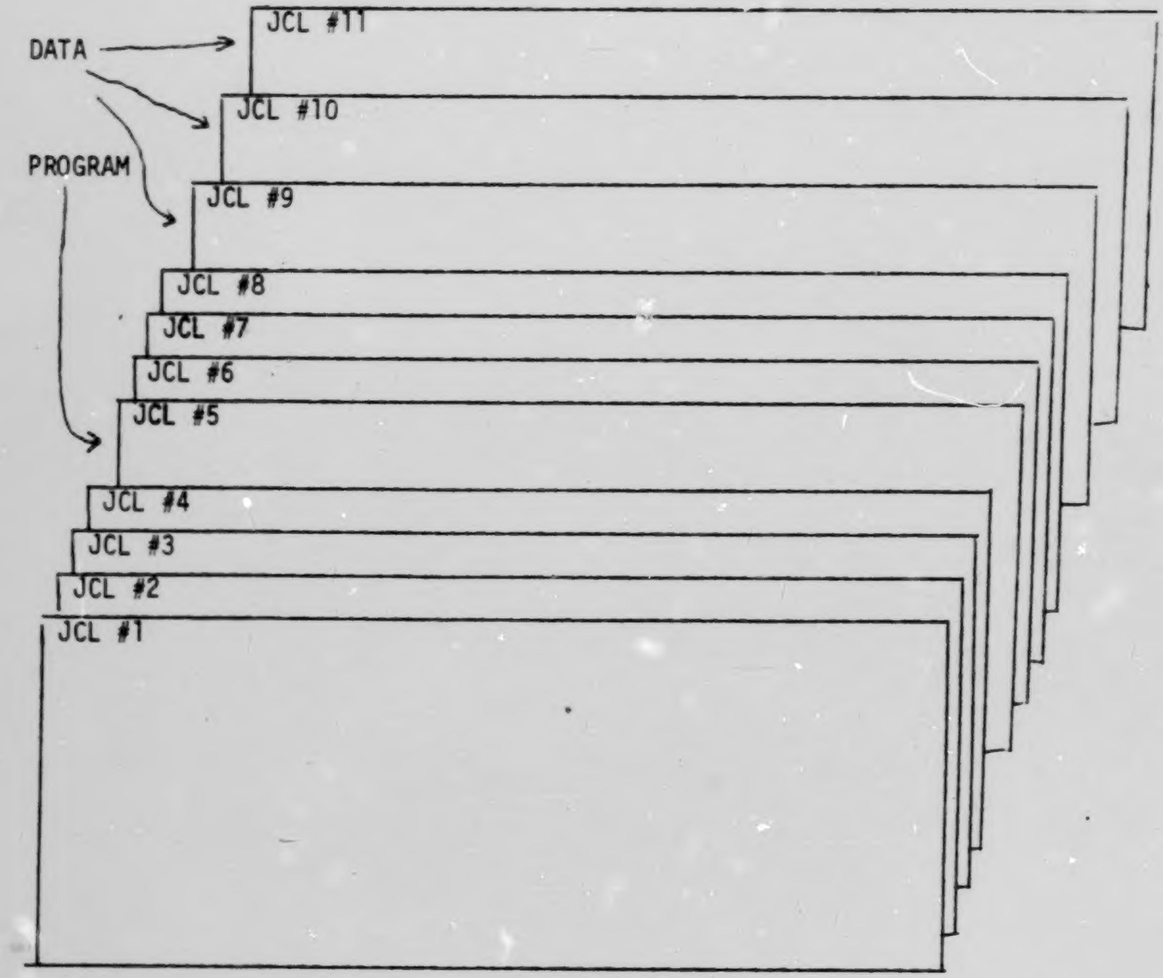

Figure 106: JCL Set Up for P-H

```
JCL #1:  //JOBCARD (XXXXXXXX,60,10,,1602),JONES,CLASS=D
JCL #2:  /*TAPE7            1
JCL #3:  // EXECUTE COBUCLG
JCL #4:  //SYSIN DD *
JCL #5:  //GO.SYSUDUMP DD SYSOUT=A
JCL #6:  //GO.SYSPRINT DD SYSOUT=A
JCL #7:  //GO.TAPEIN DD DISP=SHR,DSN=COEBA2.T7351ED
JCL #8:  //GO.SYSIN1 DD *
JCL #9:  //GO.SYSIN2 DD *
JCL #10: //GO.SYSIN3 DD *
JCL #11: /*
```

Figure 106: Continued

Chapter 12

INTERFACING MODULE

BACKGROUND

Neither manpower demand information nor manpower supply information used exclusively is sufficient for a realistic determination of the manpower situation in a given geographic area. When planning vocational or technical education programs in Kansas, it is necessary that discrepancies between these two inputs be examined, e.g., the manpower demand for welders may be 500 workers annually while the annual trained manpower supply may be 650 workers which means that there is an oversupply of 150 workers annually. In this example, the information that 500 welders are needed annually and that 650 welders are trained annually is not particularly meaningful until demand and supply are compared.

It may be argued that the discrepancy between demand and supply (net manpower needs) for a limited geographic area is not an appropriate base from which to plan training since student migration is a mitigating factor, i.e., if students cannot get jobs in the immediate area, they will go to an area where they can get jobs. In Kansas, where many regions have a difficult time attracting workers from other areas, training students for export is viewed as a type of economic suicide. Due to limited funds and more important, limited numbers of potential vocational and technical students, offering training programs which export large numbers of students means that programs needed to support local industry cannot be offered. It is a general consensus in a state like Kansas that vocational training will serve the local community first, the state second, and third, if funds and students are available, the other areas of the nation.

It is more difficult than it may seem at first glance to match training programs with occupations in terms of demand and supply data. Many programs train for a cluster of occupations. Several different types of programs may supply manpower to a single occupation. On the other hand, several different occupations may relate to the same training program or a given occupation may relate to several training programs. Finally, in both the case of programs and occupations, one title may relate to a variety of job descriptions or program descriptions, i.e., there is no assurance that auto mechanic is defined the same way in every industry or that an auto mechanic program is defined the same in every school.

The purpose of this module is to describe the technique used in Kansas to match manpower supply information with manpower demand information. There is no assurance that the matching (interfacing) presented here will be appropriate for other states and, in fact, there is at least some evidence that it will not be appropriate. The general approach used to derive the interfacing, however, should be transferable to other circumstances.

GENERAL MODULE DESCRIPTION

This module uses input from the Manpower Demand Module, the Student Accounting System Module and the Non-Public Manpower Supply Module to determine the difference (net manpower need) for a selected set of subprofessional occupations in Kansas. The matching or interfacing of data from these sources must deal in terms of the occupational titles and program titles used in other modules. Since, as indicated previously, there is not a one to one match between the data sets, a series of decisions were made to determine how data would be interfaced. Probably the most important single decision was to interface demand data against supply data, i.e., break demand data where necessary into different clusters but in no case, have program data broken into different clusters. This decision was based on the expected use of the interfacing, i.e., planning programs. Other decisions included (1) for what types of occupations do specific training programs prepare students, (2) should related (but not directly associated) occupations be interfaced against programs, and (3) how are occupational needs which are matched against several training programs to be prorated.

These decisions were made by state supervisors both individually and in conference depending on whether or not the problem overlapped several service areas. The K-MUST staff coordinated the efforts of the supervisors and a tentative interfacing scheme was presented to the State Department of

Education. This tentative interfacing scheme was revised as suggestions were made and it is realized that changes in the procedure will be made as the need arises. Table 7 presents the interfacing scheme as presently constructed.

Presently, the interfacing procedure is conducted by hand calculation. It is recommended that the hand method be used until all bugs are worked out of the system at which time computerization will be feasible.

ENTERING SUPPLY DATA

Supply data is entered in the interfacing by program type. Since program supply is not distributed over several clusters and is on a one to one basis with the interfacing, direct entry is possible. Only those students who are expected to be seeking employment are counted (see below). The Student Accounting System Module provides data on the number of public school completions by program type while the non-Public Manpower Supply Module provides data on other sources of supply. In the K-MUST case, annual supply is expanded to reflect a five year supply if the training mix is not changed.

As previously indicated, supply from public school vocational and technical programs funded under the 1968 Amendments, public school supply from other public school training such as that conducted at colleges and public hospitals, private school supply, MDTA supply, Apprenticeship supply and Bureau of Corrections supply are entered in the interfacing. In the K-MUST case, separate columns are reported for (1) secondary under the 1968 Amendments, (2) post-secondary under the 1968 Amendments, (3) adult under the 1968 Amendments, (4) delayed entries from programs under the 1968 Amendments, (5) non-vocational public training, (6) Bureau of Apprenticeship training, MDTA training, and Bureau of Corrections training, and (7) private school training. Figure 107 gives an example page of the interfacing showing the supply columns.

As indicated above, only graduates who are expected to be seeking employment are counted. This means that the number of completions from the programs must be factored since not every graduate seeks employment. Table 8 provides a list of the percentages used to factor the completions (in every

Table 7

Interfacing Scheme

Occupations	Programs
Farmer and Farm Wkrs	Production Ag
Ag Mechanics Other Related Mechanics	Ag Mechanics
Groundskeepers and Nursery Wkrs	Horticulture
Ag Sales Wkrs Ag Service Wkrs Ag Processing Wkrs	Ag Sales and Service Ag Products
Workers in Conservation and Management of Natural Resources	Ag Resources Ag Forestry
Advertising Agents and Salesworkers	Advertising
Finance and Credit Workers	Finance and Credit
Manufacturing Salesmen	Industrial
Insurance Salesmen	Insurance
Service Station Attendants	Petroleum
Real Estate Agent	Real Estate

Table 7 (continued)

Occupations	Programs
Other Salesworker N.E.C.	Apparel and Accessories Automobile Floristry Food Distribution Food Services General Merchandise Hardware and Building Home Furnishings Hotel and Lodging International Trade Personal Services Recreation and Tourism
Deliverymen, Cab	Transportation
Dental Assistant	Dental Assistant
Dental Hygienist	Dental Hygienist
Dental Lab Tech	Dental Lab Tech
Licensed Practical Nurse	LPN Training
Medical Assistant	Medical Assistant
Medical Lab Asst.	Medical Lab Asst.
Medical Secretary Medical Record Clerk Ward Clerk	Medical Record Secretary
Nurse Aide	Nurse Aide

Table 7 (continued)

Occupations	Programs
Registered Nurse	Diploma Nurse Baccalaureate Nurse Associate Degree Nurse
Teacher Aide Child Care Center Workers PVT Household Child Care Wkrs	Child Care and Guidance
Laundry Workers Sewers and Stitchers	Clothing Management Production & Services
Cooks Waiters and Waitresses Fountain Workers Bartenders	Food Management Production and Services
Steno/Secretary and Related	Secretary/Steno
Accounting Clerks Bookkeepers Bank Tellers Cashiers	Accounting & Computing
Office Machine Operator Keypunch Operator	Office Machines and Keypunch
Computer Programmer Computer Operator	Data Processing
Shipping and Receiving Clks	Material Support
Telephone Operator	Communications
Personnel Clks	Personnel

Table 7 (continued)

Occupations	Programs
Manager/Supervisor	Supervision
Other Clerical	Typing and Other Clerical N.E.C.
Civil Technician Surveyor	Civil Technology
Electronics Tech	Electronics Tech
Police, Detective, Sheriff Security Guard	Police Science
Air Conditioning Mechanic	Air Conditioning
Appliance Repairman	Appliance Repair
Auto Body Mech	Auto Body
Auto Mechanic	Auto Mechanics
Airplane Mechanic	Aviation Occupation
Office Machine Mechanic	Business Machine Repair
Commercial Artist	Commercial Art
Photographer	Photography
Carpenter Roofer	Carpentry

Table 7 (continued)

Occupations	Programs
Electrician	Electricity
Painter Plasterer	Painting
Brick, Stone and Tile Setters Cement and Concrete Workers	Masonry
Plumbers and Pipefitters	Plumbing
Janitors and Sextons Charwomen	Custodial Service
Railroad Mechanic Diesel Mechanic	Diesel Mechanic
Draftsman	Drafting
Lineman	Lineman
Electronic Mech Electronic Assembler	Electronics (Voc)
Foremen	Foremanship
Radio and TV Mech	Radio and TV
Printing Occupations	Graphic Arts
Welders	Welding

Table 7 (continued)

Occupations	Programs
Machinists Machine Tool Operator	Machine Shop
Sheet Metal Wkrs	Sheet Metal
Cosmetologists	Cosmetology
Small Engine Mech	Small Engines
Cabinetmakers	Cabinetmaking
Truck Drivers	Truck Driving
Upholsterers	Upholstering
Evacuating and Grading Machine Operators	Heavy Equipment

CLUSTERS OF OCCUPATIONS	MANPOWER NEEDS	MANPOWER SUPPLY							NET MANPOWER NEEDS	CLUSTERS OF TRAINING PROGRAMS
		PUBLIC SCHOOLS						PRIVATE SCHOOLS		
		VOCATIONAL - TECHNICAL				NON-VOCATIONAL PUBLIC TRAINING	BUREAU OF APPRENTICESHIP, MANPOWER DEVELOPMENT TRAINING, AND BUREAU OF CORRECTIONS			
		SECONDARY	POST SECONDARY	ADULT PREPARATORY	DELAYED ENTRIES					
OTHER SALESWORKER N. E. C.	10359									
		251	81		44			244		APPAREL & ACCESSORIES
		115	12		16					AUTOMOBILE
		41	10		6					FLORISTRY
		342	56		51					FOOD DISTRIBUTION
		197	4		27					FOOD SERVICES
		827	399		160			1250		GENERAL MERCHANDISE
		66	106		23					HARDWARE & BUILDING
		22	38		8					HOME FURNISHINGS
										HOTEL & LODGING
		12			1					INTERNATIONAL TRADE
		91	20		13					PERSONAL SERVICES
										RECREATION & TOURISM
TOTAL	10359	1964	726		349			1494	5826	
DELIVERYMEN, CAB	1591	13	6		2				1570	TRANSPORTATION
DENTAL ASSISTANT	696	13	99					150	434	DENTAL ASSISTANT
DENTAL HYGIENIST	291		134						157	DENTAL HYGIENIST
DENTAL LAB TECH	96						2		94	DENTAL LAB TECH
LICENSED PRACTICAL NURSE	2974		1922						1052	LPN TRAINING
MEDICAL ASSISTANT	1587		32					300	1255	MEDICAL ASSISTANT
MEDICAL LAB ASST.	378		24						354	MEDICAL LAB ASST.

Figure 107: Sample Interfacing Page

Table 8

Percentages Used to Factor Program Completions to Reflect Workers Entering the Labor Market

Training Program	1968 Amendments				Non-Vocational Public Training	Bureau of Apprenticeship, Manpower Development Training, and Bureau of Corrections	Private Schools
	Secondary	Post Secondary	Adult Preparatory	Delayed Entries			
Production Ag	.43	.64		.24	.80		
Ag Mechanics	.44	.64			.80		
Horticulture	.80	.68		.24	.80		
Ag Sales and Service	.39	.62	.60		.80		
Ag Products	.50	.66			.80		
Ag Resources	.67	.50		.05	.80		
Ag Forestry	1.00			.05			
Advertising	.63	.83		.12			
Finance and Credit	.50	.50		.09			
Industrial	.34	.80		.10			
Insurance	.50	1.00		.10			
Petroleum	.43	.67		.15			
Real Estate	.20			.17			
Apparel and Accessories	.50	.47		.13			.50
Automobile	.54			.13			
Floristry	.75	.50		.12			

Table 8 (continued)

Training Program	1968 Amendments				Non-Vocational Public Training	Bureau of Apprenticeship, Manpower Development Training, and Bureau of Corrections	Private Schools
	Secondary	Post Secondary	Adult Preparatory	Delayed Entries			
Food Distribution	.67	.42		.13			
Food Services	.65	.79		.13			
General Merchandise	.56	.54		.13			.50
Hardware and Building	.82	.78		.13			
Home Furnishings	.43	.56		.13			
Hotel and Lodging							
International Trade	.50			.08			
Personal Services	.43	.60		.12			
Recreation and Tourism							
Transportation	.25	.50		.11			
Dental Assistant	.50	.86					.68
Dental Hygienist		.67				1.00	
Dental Lab Tech					.78		
LPN Training		.86					
Medical Assistant		.54					.68
Medical Lab Asst.		.69					
Medical Record Secretary		.80					.68
Nurse Aide	.63		.94				
Diploma Nurse					.80		
Baccalaureate Nurse					.80		
Associate Degree Nurse		.82					
Child Care and Guidance	.64	.80					

Table 8 (continued)

Training Program	1968 Amendments: Secondary	1968 Amendments: Post Secondary	1968 Amendments: Adult Preparatory	1968 Amendments: Delayed Entries	Non-Vocational Public Training	Bureau of Apprenticeship, Manpower Development Training, and Bureau of Corrections	Private Schools
Clothing Management, Production and Services	.50					.78	
Food Management, Production and Services	.54					.78	
Secretary/Steno	.61	.64	.50		.80		.50
Accounting and Computing	.45	.91	.50		.80	.78	.50
Office Machines, Keypunch	.52	.80	.50				.50
Data Processing	.14	.81	.50		.80		.50
Materials Support	.50	.80					
Communications	.50						
Personnel	.50	.82					
Supervision					.80		.50
Typing and Other Clerical N.E.C.	.40	.67	.50		.80	.78	.50
Civil Technology	.63	.76					
Electronics Tech	.65	.47					.68
Police Science		.65					
Air Conditioning	.71	.95	.39			.78	
Appliance Repair	.48	.50	.47			.78	
Auto Body	.54	.90	.47			.78	.68
Auto Mechanics	.62	.79	.47			.78	.68

Table 8 (continued)

Training Program	1968 Amendments				Non-Vocational Public Training	Bureau of Apprenticeship, Manpower Development Training, and Bureau of Corrections	Private Schools
	Secondary	Post Secondary	Adult Preparatory	Delayed Entries			
Aviation Occupations	.40	.91	.47				.68
Business Machine Repair						1.00	.68
Commercial Art	.60	.73					.68
Photography	.40	.67	.47				
Carpentry	.67	.81	.44			1.00	
Electricity	.58	.72	.47			1.00	
Painting						1.00	
Masonry	1.00					1.00	
Plumbing		.46	.48			1.00	
Custodial Services	.80					.78	
Diesel Mechanic	.71	.59					
Drafting	.63	.40	.47				.68
Lineman		.88				1.00	
Electronics (Voc)	.30	.88	.47				
Foremanship							
Radio and TV	.28	.88	.48			.78	
Graphic Arts	.56	.76	.50			1.00	
Welding	.60	.85	.47	.05		1.00	
Machine Shop	.60	.85	.47			1.00	
Sheet Metal	.60	.85	.47			1.00	

Table 8 (continued)

Training Program	1968 Amendments				Non-Vocational Public Training	Bureau of Apprenticeship, Manpower Development Training, and Bureau of Corrections	Private Schools
	Secondary	Post Secondary	Adult Preparatory	Delayed Entries			
Cosmetology	.40	.90					.68
Small Engines	1.00	.75	.48				
Cabinetmaking	.50	.90	.45				.68
Truck Driving		.49					
Upholstering						.78	
Heavy Equipment		.64					

case but delayed entries) by program type by source to give estimated number of completers expected to enter the labor market. These factors are based on (1) a history of Kansas Vocational Program follow-ups, (2) private school follow-ups, and (3) MDTA follow-ups. As the recorded history of follow-ups expands it is expected that these factors will change to reflect a more accurate picture.

Delayed entries are computed as a percent of the supply from programs under the 1968 Amendments. Delayed entries refers to the students who enter the labor market after the initial follow-up information is gathered. This data is also found in Table 8.

ENTERING DEMAND DATA

Demand data is transfered from Module 4 output in the majority of cases. This transfer is from an occupational title in the demand output to the same title in the interfacing. In special cases, where either the demand is prorated over several clusters or the demand title is broken into subtitles, special calculations must be performed by hand. Table 9 shows the sources of the data for all interfacing demand titles. When calculations are used, the formulas are presented.

Table 9

Source of Data and Calculations Used in the Interface

Demand Title in Interfacing	Source of Data	Calculations Used
Farmers and Farm Workers	Module 4 output plus Luther Tweeton study	1/3 of replacement needs shown
Ag Mechanics	Module 4 output plus Jack De Vore's study	Present employment of farmers and farm workers divided by 34 to determine employment, then used expansion rate in other mechanic area to determine needs.
Other Related Mechanics	Module 4 output plus State Supervisor analysis	1/4 of other mechanic need minus ag mechanic need.
Groundskeepers and Nursery Workers	Module 4 output plus OTIS ratios	18 percent of need for janitors and sextons.
Ag Sales Workers	Module 4 output plus State Supervisor analysis	16 percent of total sales workers needs.
Ag Service Workers	Module 4 output plus State Supervisor analysis	13 percent of Other Service Workers, N.E.C. needs.
Ag Processing Workers	Module 4 output plus State Supervisor analysis	21 percent of Operative N.E.C. needs.
Workers in Conservation and National Resources	Kansas Government	280 over 5 year period prorated over regions by geographic size.
Advertising Agents and Sales Workers	Module 4 output plus studies by Rockey Hartzler	.7 percent of total sales workers
Finance and Credit Workers	Module 4 output plus Studies by Rockey Hartzler	.58 percent of total sales workers

Table 9 (continued)

Demand Title in Interfacing	Source of Data	Calculations Used
Manufacturing Salesmen	Module 4 output plus studies by Rockey Hartzler	8.5 percent of total sales workers
Insurance Salesmen	Module 4 output plus studies by Rockey Hartzler	8.8 percent of total sales workers
Service Station Attendant	Direct from Module 4 output	
Real Estate Agent	Module 4 output plus studies by Rockey Hartzler	2.36 percent of total sales workers
Other Sales Workers	Module 4 output	All salesworkers minus those which have been entered previously including ag sales workers.
Deliverymen, Cab	Direct from Module 4 output	
Dental Asst.	Module 4 output plus Wong study	5/6 of dentist's need
Dental Hygienist	Module 4 output plus Wong study	41 percent of dental assistant's need
Dental Lab Technician	Module 4 output plus Wong Study	10 percent of dentist's need
LPN	Direct from Module 4 output	
Medical Asst.	Module 4 output plus Wong study	1.80% of physician, surgeon's needs
Medical Lab Asst.	Module 4 output plus Wong study	4.2 divided into medical assistant's need.
Medical Sec.	Module 4 output plus Wong study	.5 percent of steno-typist-sec. need.

Table 9 (continued)

Demand Title in Interfacing	Source of Data	Calculations Used
Medical Record Clerk	Module 4 output plus Wong Study	.4 percent of clerks N.E.C. need
Ward Clerk	Module 4 output plus Wong study	53 percent of medical lab asst.
Nurse Aide	Direct from Module 4 output	
Registered Nurse	Direct from Module 4 output	
Teacher Aide	Module 4 output plus State Supervisor analysis	Need for teachers divided by 20
Child Care Center Worker	Module 4 output plus State Licensing Organizations	1.5 times teacher aide need
Private Household Child Care Worker	Module 4 output plus Home Economics Supervisor analysis	1/2 private household workers
Laundry Workers	Direct from Module 4 output	
Sewers and Stitchers	Direct from Module 4 output	
Cooks	Direct from Module 4 output	
Waiters and Waitresses	Direct from Module 4 output	
Fountain Workers	Direct from Module 4 output	
Bartenders	Direct from Module 4 output	

Table 9 (continued)

Demand Title in Interfacing	Source of Data	Calculations Used
Steno/Secretary and Related	Direct from Module 4 output	
Accounting Clerks	Direct from Module 4 output	
Bookkeepers	Direct from Module 4 output	
Bank Tellers	Direct from Module 4 output	
Cashiers	Direct from Module 4 output	
Office Machine Op.	Module 4 output plus OTIS ratios	80 percent of office machine op.
Keypunch Op.	Module 4 output plus OTIS ratios	20 percent of office machine op.
Computer Programmer	Module 4 output plus OTIS ratios	5.4 percent of other clerical and kindered
Computer Operator	Module 4 output plus OTIS ratios	1.5 percent of other clerical and kindered
Shipping and Receiving Clerks	Direct from Module 4 output	
Telephone Op.	Direct from Module 4 output	
Personnel Clerks	Direct from Module 4 output	
Managers and Supervisors	Direct from Module 4 output	
Other Clerical	Module 4 output plus OTIS ratios	Total clerk, N.E.C. - computer programmer - computer operator

Table 9 (continued)

Demand Title in Interfacing	Source of Data	Calculations Used
Civil Technician	Module 4 output plus OTIS ratios	80 percent of civil engineer needs
Surveyor	Direct from Module 4 output	
Electronic Tech	Module 4 output plus OTIS ratios	85 percent of electronic engineer
Police Detective, Sheriff	Direct from Module 4 output	
Security Guard	Direct from Module 4 output	
Air Conditioning Mechanic	Module 4 output plus OTIS ratios	24 percent of total need of mechanic, N.E.C.
Appliance Repairman	Module 4 output plus OTIS ratios	10 percent of total need of mechanic, N.E.C.
Auto Body Mech	Module 4 output plus OTIS ratios	17 percent of total need of auto mechanic
Auto Mechanic	Direct from Module 4 output	
Airplane Mechanic	Direct from Module 4 output	
Office Machine Mechanic	Direct from Module 4 output	
Commercial Artist	Module 4 output plus OTIS ratios	60 percent of total needs of photographers
Photographer	Direct from Module 4 output	
Carpenter	Direct from Module 4 output	

Table 9 (continued)

Demand Title in Interfacing	Source of Data	Calculations Used
Roofer	Direct from Module 4 output	
Electrician	Direct from Module 4 output	
Painter	Direct from Module 4 output	
Plasterer	Direct from Module 4 output	
Brick, Stone, & Tile Setters	Direct from Module 4 output	
Cement and Concrete Workers	Direct from Module 4 output	
Plumbers and Pipefitters	Direct from Module 4 output	
Janitors and Sextons	Direct from Module 4 output	
Charwomen	Direct from Module 4 output	
Railroad Mechanic	Direct from Module 4 output	
Diesel Mechanic	Module 4 output plus OTIS ratios	11 percent of mech., repairmen, N.E.C.
Draftsmen	Direct from Module 4 output	
Linemen	Direct from Module 4 output	
Electronic Mech	Module 4 output plus OTIS ratios	8 percent of mech, repairmen, N.E.C.

Table 9 (continued)

Demand Title in Interfacing	Source of Data	Calculations Used
Electronic Assembler	Module 4 output plus OTIS ratios	204 percent of electronic mechanic
Foremen	Direct from Module 4 output	
Radio & TV Mech	Direct from Module 4 output	
Printing Occupations	Direct from Module 4 output	
Welders	Direct from Module 4 output	
Machinist	Direct from Module 4 output	
Machine Tool Op	Direct from Module 4 output	
Sheet Metal Wkrs	Direct from Module 4 output	
Cosmetologists	Kansas Licensing Board	2,405 prorationed
Small Engine Mechanic	Module 4 output plus OTIS ratios	5 percent of mech, repairmen, N.E.C.
Cabinetmakers	Direct from Module 4 output	
Truck Drivers	Direct from Module 4 output	
Upholsterers	Direct from Module 4 output	
Evacuating and Grading Machine Operators	Direct from Module 4 output	

Chapter 13

INTERSTATE COORDINATION OF PLANNING MODULE

INTRODUCTION

One critical problem when projecting manpower demand and supply for a geographical area is the location of contiguous labor markets which may significantly influence manpower availability and employment opportunities. In labor markets which extend across state boundaries, there is the complex situation in which the respective states' manpower and educational policies are not necessary congruent. The educational system of each state may produce manpower within the framework of the employment situation for that particular state without consideration of the total manpower demand and supply of the area. This could result in an imbalance of manpower demand and supply. Situations of this type may imply a need for coordinated educational planning among states which share a labor market.

One such labor market is the Kansas City Standard Metropolitan Statistical Area (SMSA). The need for a manpower information system to help implement coordinated educational planning in the Kansas City area was recognized by educational authorities from both Kansas and Missouri at a meeting in the Spring of 1972. The K-MUST Project staff was asked to develop a manpower information system for the Kansas City SMSA to serve as a data base for educational planners. The system developed by the K-MUST staff is presented in this chapter.

SYSTEM DESCRIPTION

The scope of this system is the estimation of manpower demand and supply in the SMSA and the interfacing of these two factors to determine estimated net manpower needs for the area. Net manpower needs is the discrepancy between manpower demand and manpower supply.

Estimating Manpower Demand for an Interstate Area

There are basically two approaches for generating manpower demand data for an interstate area. One approach is for each state to estimate manpower demand in its segment of the interstate area and then to project the demand for the total area by summing the estimated demand in the segments. This approach is probably feasible in the Kansas City SMSA since Kansas has the K-MUST System and Missouri has the Missouri Occupational Training Information System (MOTIS), both of which estimate demand for their respective segments of the SMSA. Additionally, since Oklahoma has the Occupational Training Information System (OTIS), it would be possible to combine data from all three states in regional manpower demand projections.

A second approach is to have one of the states involved, or an outside organization, project demand for the entire interstate areas. This is presently feasible for the Kansas City SMSA since the Bureau of Labor Statistics has recently released manpower demand figures for this area. In the future, however, this approach may be redundant since the states will have already produced this data on a segmented basis.

The actual technique for estimating manpower demand could be one of many methods, i.e., a modification of the Bureau of Labor Statistics Matrix Method, employer surveys, etc. K-MUST and MOTIS have selected the modification of the Bureau of Labor Statistics Matrix Method while OTIS uses employer surveys to project manpower demand.

In the example given in this chapter, manpower demand figures were generated by the regional Bureau of Labor Statistics (Kansas City) in conjunction with the Kansas Employment Security Commission (Topeka). The technique used to produce these projections was the Bureau of Labor Statistics Matrix Method A. For the next two or three years, this data will probably be an accurate planning base.

Estimating Manpower Supply for an Interstate Area

Projecting manpower supply can logically be divided into three parts according to source, i.e., supply from public vocational or technical training, supply from private schools, and supply from other training organizations. Each of these sources require a separate subsystem to project manpower supply.

Public school vocational and technical training is reported annually to the federal government. A particularly useful feature of this report is information on manpower available to the labor market which is indicated by training program type. K-MUST, MOTIS and OTIS all have student accounting systems which generate this type of data for the federal report. The public school supply can be estimated for the given area by averaging the available manpower supply for the two immediately preceding years and considering this figure to be an annual supply for future years if training trends continue. (See Chapter 2)

Private schools should be surveyed to determine what their output of students has been for the past several years. This data must be collected by program type. The output of students from clerical programs should be factored by .5 to estimate graduates available for employment while non-clerical programs should be factored by .65 to estimate graduates available for employment. Again, the average supply for the past several years should serve as an estimate of future supply. (See Chapter 3)

When estimating supply from other training sources such as MDTA Programs, Apprenticeship Programs, and Bureau of Corrections Programs, the organization in charge of such programs forecasts the number of graduates to be produced in the future. This figure should be collected on a program type basis and the number of graduates should be factored by .78 to determine the number of graduates available for placement.

Interfacing Demand and Supply Data for an Interstate Area

Interfacing is matching and comparing demand and supply by occupational-program cluster. If two different states have determined manpower needs by two different methods, problems may arise because occupational categorization may not be consistent. On the program side of the interface, different states may use the same program title for different types of training or more likely, may have different options within a given program type. Solution of these types of problems can best be achieved through a mediating process between the organizations involved.

Figure 108 presents an interfacing of data for an interstate region, i.e., the Kansas City SMSA. Manpower demand is in the first column while

CLUSTERS OF OCCUPATIONS	MANPOWER NEEDS	MANPOWER SUPPLY							NET MANPOWER NEEDS	CLUSTERS OF TRAINING PROGRAMS
		PUBLIC SCHOOLS						PRIVATE SCHOOLS		
		VOCATIONAL - TECHNICAL				NON-VOCATIONAL PUBLIC TRAINING	BUREAU OF APPRENTICESHIP, MANPOWER DEVELOPMENT TRAINING, AND BUREAU OF CORRECTIONS			
		SECONDARY	POST SECONDARY	ADULT PREPARATORY	DELAYED ENTRIES					
OFFICE MACHINE OP	1675									
KEYPUNCH OP	419									
				274				1103		OFFICE MACHINES & KEYPUNCH
TOTAL	2094			274				1103	717	
COMPUTER PROGRAMMER	799									
COMPUTER OP	451									
		87	595	360		32		1275		DATA PROCESSING
TOTAL	1240	87	595	360		32		1275	(1109)	
SHIPPING & RECEIVING CLKS	213	10	41						162	MATERIAL SUPPORT
TELEPHONE OP	1547	23							1524	COMMUNICATIONS
PERSONNEL CLKS	353	3	23						327	PERSONNEL
MANAGER/SUPERVISOR	15283					8201		123	6959	SUPERVISION
OTHER CLERICAL	16977	964	133	411		9486	821	688	4474	TYPING & OTHER CLERICAL N. E. C.
CIVIL TECHNICIAN	526									
SURVEYOR	110									
		18	16							CIVIL TECHNOLOGY
TOTAL	636	18	16						602	
ELECTRONICS TECH	444	10	172					118	144	ELECTRONICS TECH
POLICE, DETECTIVE, SHERIFF	859									
SECURITY GUARD	545									
			329							POLICE SCIENCE
TOTAL	1404		329						1075	

Figure 108: Sample Page from the Kansas City SMSA Interfacing

manpower supply is found in columns 2, 3, 4, 5, 6, 7, and 8 depending on source of supply. Net manpower needs are computed by subtracting supply from demand. When supply is greater than demand, the result of the computation is negative and indicated by parentheses. The matching of occupations and programs is strictly a Kansas format since no other state was requested to provide input for this process.

SUMMARY

There are two alternatives for an Interstate Planning Coordination System because of the two approaches to demand projecting. Figure 109 presents Alternative 1 which uses the state contributing demand for segment concept while Figure 110 presents Alternative 2 which uses the single source of demand data concept.

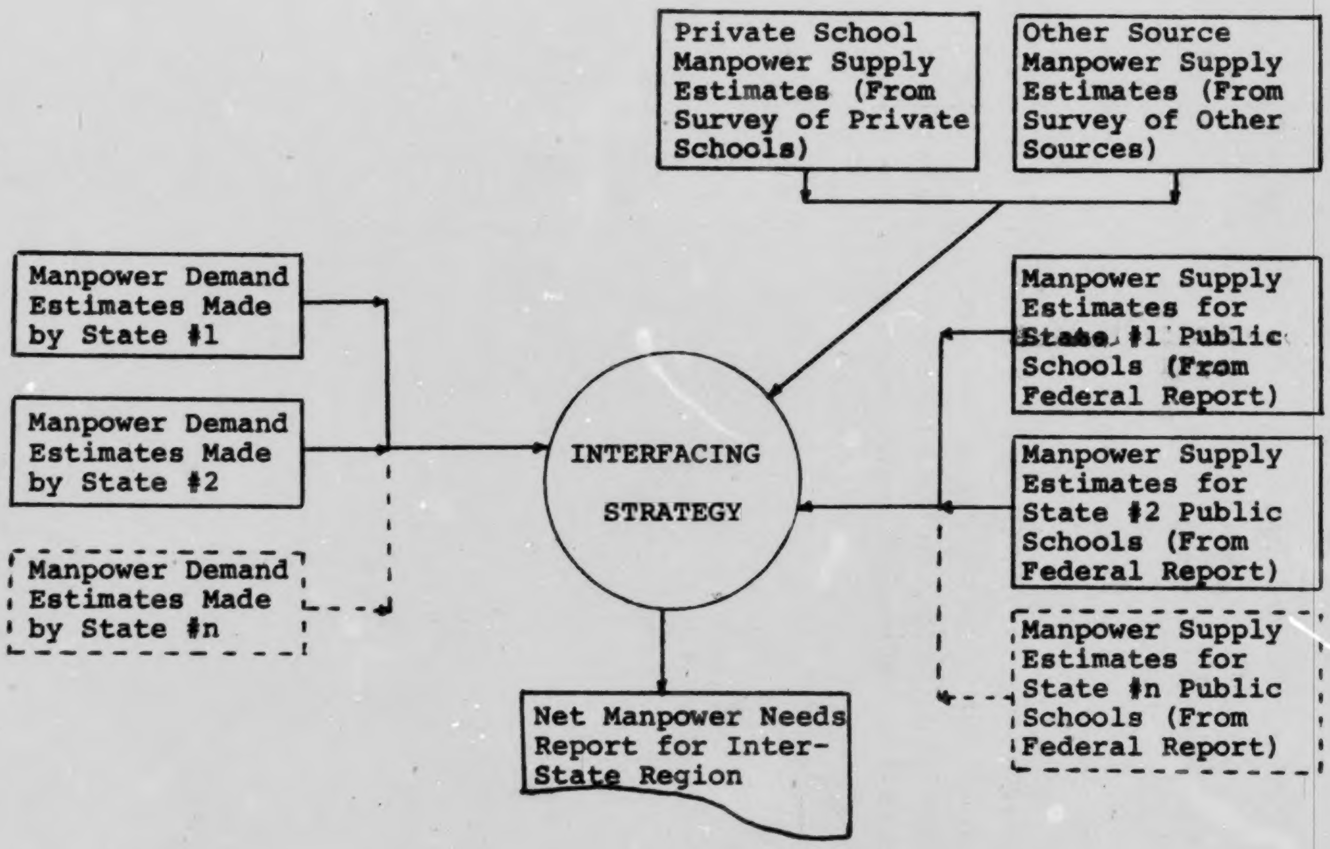
Private School Manpower Supply Estimates (From Survey of Private Schools)
Other Source Manpower Supply Estimates (From Survey of Other Sources)
Manpower Demand Estimates Made by State #1
Manpower Demand Estimates Made by State #2
Manpower Demand Estimates Made by State #n
INTERFACING STRATEGY
Manpower Supply Estimates for State #1 Public Schools (From Federal Report)
Manpower Supply Estimates for State #2 Public Schools (From Federal Report)
Manpower Supply Estimates for State #n Public Schools (From Federal Report)
Net Manpower Needs Report for Inter-State Region

Figure 109. Interstate Planning Module (Alternative 1)

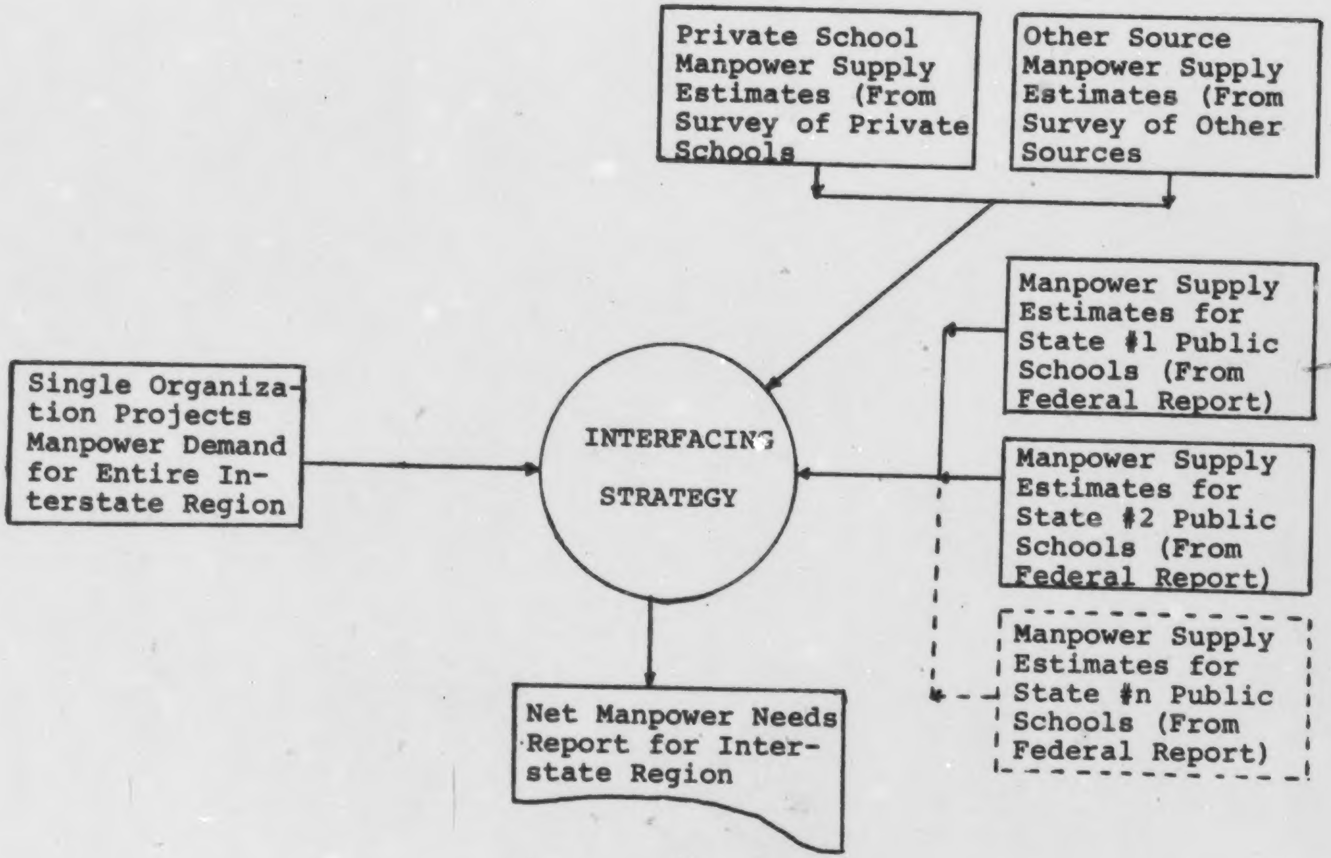
Private School Manpower Supply Estimates (From Survey of Private Schools
Other Source Manpower Supply Estimates (From Survey of Other Sources
Manpower Supply Estimates for State #1 Public Schools (From Federal Report)
Manpower Supply Estimates for State #2 Public Schools (From Federal Report)
Manpower Supply Estimates for State #n Public Schools (From Federal Report)
Single Organization Projects Manpower Demand for Entire Interstate Region
INTERFACING STRATEGY
Net Manpower Needs Report for Interstate Region

Figure 110. Interstate Planning Module (Alternative 2)

Chapter 14

OPTIMUM PROGRAM MIX MODULE

NEED FOR THE MODULE

Objective methods have not been common in the decision making process of vocational and technical education program planning. The usual approach has been for vocational education managers to make assessments based upon personal experience, authority or tradition. Even when objective data has been available, decision makers often have not understood methods of utilizing the information. This module was developed from a recognition of the need for an objective decision making method which can be used to formulate new vocational and technical program mixes and to evaluate existing program mixes. The approach incorporates those variables which influence the kind of program mix best suited to serve student needs and manpower needs within the framework of available financial resources.

GENERAL MODULE DESCRIPTION

The development of a model that can be used to determine the optimum program mix in a given geographical area involves identifying variables that tend to determine or restrict the program mix. A structured manipulation of these variables should yield the optimum program mix relative to some predetermined goal, e.g., maximization of number of students placed.

Variables that have been identified for manipulation within the model are (1) cost per program, (2) total available vocational and technical education financial resources, (3) number of students interested in particular programs, (4) number of programs of certain types needed to meet manpower needs, (5) number of students a particular program can serve, (6) total student population to be served, and (7) the number of students expected to be placed into employment for which they were trained. Variables that are implicit in the model are dropout rate (implied in placement rate) and length of training program (implied through program cost data).

Several approaches were considered in the model development and linear programming was selected as the most feasible alternative. Linear programming concerns itself with the efficient use or allocation of limited resources to meet desired objectives where solutions satisfy both the conditions of the problem (constraints) and the given objective in terms of the most optimum solution.

The objective to be optimized can be any one of several variables. Possibly some of the more feasible objectives would be to maximize the number of students placed in occupations related to their training, the number of disadvantaged and handicapped students enrolled, or societal cost/benefit ratios.

The linear programming model presented here determines the optimum program mix for placing the largest possible number of students in the work force given constraints of money available, students available, etc. relative to 50 possible program types. (Note: Any other feasible objective can easily be substituted into this model). (See Table 10)

The equation which is maximized by this model is:

$$C_1X_1 + C_2X_2 + \ldots\ldots + C_iX_i + \ldots\ldots + C_{119}X_{119}$$

where:

C_i equals the number of students placed annually from a program of type i (Note: C_{51} through C_{119} equal zero), and X_i equals the number of type i programs projected by this model where i is less than or equal to 50 and equals slack variables where i is greater than 50.

Restraints on the system include the standard restraint equations which restrict all X_i to values greater than or equal to zero plus the following special restraint equations.

$$(1)\quad a_{1,1}X_1 + a_{1,2}X_2 + \ldots + a_{1,i}X_i + \ldots\ldots + a_{1,119}X_{119} \leq b_1$$

where:

$a_{1,1}$ through $a_{1,50}$ are Average Annual costs of program types 1 through 50 respectively, $a_{1,51}$ equals one, $a_{1,52}$ through $a_{1,119}$ equals zero and b_1 is the total financial resources available to finance the optimum program mix.

$$(2)\quad a_{2,1}X_1 + a_{2,2}X_2 + \ldots + a_{2,j}X_j + \ldots + a_{2,119}X_{119} \leq b_2$$

Table 10

POSSIBLE PROGRAMS IN THE OPTIMUM PROGRAM MIX

Program	Related Occupations
Production Agriculture	Farmers and Farm Workers
Agriculture Mechanics	Agricultural Mechanics and Related
Horticulture	Groundskeepers, Nursery Workers, and Workers in Conservation of Natural Resources
Agriculture Sales and Service	Agriculture Sales and Service Wks
Distributive Education	Advertizing Agents and Sales Wks, Finance and Credit Wks, Manufacturing Salesmen, Insurance Salesmen, Service Station Attendants, Real Estate Agents, and Other Sales Wks
Transportation	Deliverymen, Cab Drivers
Dental Assistant	Dental Assistants
Dental Hygienist	Dental Hygienists
Dental Laboratory Technician	Dental Laboratory Technicians
Licensed Practical Nurse	Licensed Practical Nurse
Medical Assistant	Medical Assistants
Medical Laboratory Assistant	Medical Laboratory Assistants
Medical Record Secretary	Medical Record Secretary, Medical Record Clerk, Ward Clerk
Child Care and Guidance	Teacher Aide, Child Care Center Wks, Private Household Wks,
Clothing Management, Production and Service	Laundry Wks, Sewers and Stitchers,
Food Management, Production and Service	Cooks, Waiters and Waitresses
Secretary/Steno	Secretary/Steno and Related
Accounting and Computing	Accounting Clerks, Bookkeepers, Bank Tellers, Cashiers

Table 10 (Continued)

Program	Related Occupations
Office Machine and Keypunch	Office Machine and Keypunch Ops
Data Processing	Computer Programmers and Ops
Material Support	Shipping and Receiving Clks
Communications	Telephone Ops
Typing and Other Clerical	Other Clerical
Civil Technology	Civil Technicians, Surveyor
Electronic Technology	Electronic Technicians
Police Science	Policemen, Detectives, Guards
Air Conditioning	Air Conditioning Mechanic
Appliance Repair	Appliance Repairmen
Auto Body	Auto Body Mechanic
Auto Mechanics	Auto Mechanics
Aviation Occupations	Airplane Mechanic
Commerical Art	Commerical Artist
Photography	Photographer
Carpentry	Carpenter, Roofer, Cabinetmaker
Electricity	Electricians
Masonry	Brick, Stone, and Tile Setters
Plumbing	Plumbers and Pipe Fitters
Diesel Mechanics	Railroad Mechanic and Diesel Mech
Drafting	Draftsmen
Linemen	Lineman
Electronics (Voc)	Electronic Mechanics and Assemblers
Radio and TV	Radio and TV Mechanics
Graphic Arts	Printing Occupations
Welding	Welders and Flame Cutters
Machine Shop	Machinist and Machine Tool Ops
Sheet Metal	Sheet Metal Wks
Cosmetology	Cosmetologist
Small Engines	Small Engine Mechanics
Truck Driving	Truck Driver
Heavy Equipment	Heavy Equipment Operators

where:

$a_{2,j}$ is the estimated enrollment in program j if program j is in the Technical Cluster, otherwise $a_{2,j}$ equals zero except for $a_{2,52}$ which equals one, and b_2 equals the estimated number of students in the potential student population who are interested in technical training.

(3) $a_{3,1}X_1 + a_{3,2}X_2 + \dots + a_{3,j}X_j + \dots + a_{3,119}X_{119} \leq b_3$

where:

$a_{3,j}$ is the estimated enrollment in a typical j type program if j is in the Clerical Cluster, otherwise, $a_{3,j}$ equals zero except for $a_{3,53}$ which equals one, and b_3 equals the estimated number of students in the potential student population interested in clerical training.

(4) $a_{4,1}X_1 + a_{4,2}X_2 + \dots + a_{4,j}X_j + \dots + a_{4,119}X_{119} \leq b_4$

where:

$a_{4,j}$ is the estimated enrollment in a typical j type program if j is in the Medical Cluster, otherwise, $a_{4,j}$ equals zero except for $a_{4,54}$ which equals one, and b_4 equals the estimated number of students in the potential student population who are interested in medical training.

(5) $a_{5,1}X_1 + a_{5,2}X_2 + \dots + a_{5,j}X_j + \dots + a_{5,119}X_{119} \leq b_5$

where:

$a_{5,j}$ is the estimated enrollment in a typical j type program if j is in the Mechanics and Repairman Cluster, otherwise, $a_{5,j}$ equals zero except for $a_{5,55}$ which equals one, and b_5 equals the estimated number of students in the student population who are interested in mechanic and repairman training.

(6) $a_{6,1}X_1 + a_{6,2}X_2 + \dots + a_{6,j}X_j + \dots + a_{6,119}X_{119} \leq b_6$

where:

$a_{6,j}$ is the estimated enrollment in a typical j type program if j is in the Metal Craftsmen Cluster, otherwise, $a_{6,j}$ equals zero except for $a_{6,56}$ which equals one, and b_6 equals the estimated number of students in the potential student population who are interested in metal crafts training.

(7) $a_{7,1}X_1 + a_{7,2}X_2 + \dots a_{7,j}X_j + \dots + a_{7,119}X_{119} \leq b_7$

where:

$a_{7,j}$ is the estimated enrollment in a typical j type program is j is in the Sales Cluster, otherwise, $a_{7,j}$ equals zero except for $a_{7,57}$ which equals one, and b_7 equals the estimated number of students in the student population who are interested in sales training.

(8) $a_{8,1}X_1 + a_{8,2}X_2 + \dots + a_{8,j}X_j + \dots + a_{8,119}X_{119} \le b_8$

where:

$a_{8,j}$ is the estimated enrollment in a typical j type program if j is in the Service Worker Cluster, otherwise, $a_{8,j}$ equals zero except for $a_{8,58}$ which equals one, and b_8 equals the estimated number of students in the student population who are interested in service work training.

(9) $a_{9,1}X_1 + a_{9,2}X_2 + \dots + a_{9,j}X_j + \dots + a_{9,119}X_{119} \le b_9$

where:

$a_{9,j}$ is the estimated enrollment in a typical j type program if j is in the Construction Cluster, otherwise, $a_{9,j}$ equals zero except for $a_{9,59}$ which equals one, and b_9 equals the estimated number of students in the student population who are interested in construction training.

(10) $a_{10,1}X_1 + a_{10,2}X_2 + \dots + a_{10,j}X_j + \dots + a_{10,119}X_{119} \le b_{10}$

where:

$a_{10,j}$ is the estimated enrollment in a typical j type program if j is in the Agriculture Cluster, otherwise, $a_{10,j}$ equals zero except for $a_{10,60}$ which equals one, and b_{10} equals the estimated number of students in the student population who are interested in agriculture training.

(11) $a_{11,1}X_1 + a_{11,2}X_2 + \dots + a_{11,j}X_j + \dots + a_{11,119}X_{119} \le b_{11}$

where:

$a_{11,j}$ is the estimated enrollment in a typical j type program if j is in the Drivers and Deliverymen Cluster, otherwise, $a_{11,j}$ equals zero except for $a_{11,61}$ which equals one, and b_{11} equals the estimated number of students in the student population who are interested in driver and delivery training.

(12) $a_{12,1}X_1 + a_{12,2}X_2 + \dots + a_{12,j}X_j + \dots + a_{12,119}X_{119} \le b_{12}$

where:

$a_{12,j}$ is the estimated enrollment in a typical j type program if j is the Textile Occupation Cluster, otherwise, $a_{12,j}$ equals zero except for $a_{12,62}$ which equals one, and b_{12} equals the estimated number of students in the student population who are interested in textile occupations training.

(13) $a_{13,1}X_1 + a_{13,2}X_2 + \dots + a_{13,j}X_j + \dots + a_{13,119}X_{119} \leq b_{13}$

where:

$a_{13,j}$ is the estimated enrollment in a typical j type program if j is in the Food Cluster, otherwise, $a_{13,j}$ equals zero except for $a_{13,63}$ which equals one, and b_{13} equals the estimated number of students in the student population who are interested in food service training.

(14) $a_{14,1}X_1 + a_{14,2}X_2 + \dots + a_{14,j}X_j + \dots + a_{14,119}X_{119} \leq b_{14}$

where:

$a_{14,j}$ is the estimated enrollment in a typical j type program if j is in the Protective Service Cluster, otherwise, $a_{14,j}$ equals zero except for $a_{14,64}$ which equals one, and b_{14} equals the estimated number of students in the student population who are interested in protective service training.

(15) $a_{15,1}X_1 + a_{15,2}X_2 + \dots + a_{15,j}X_j + \dots + a_{15,119}X_{119} \leq b_{15}$

where:

$a_{15,j}$ is the estimated enrollment in a typical j type program if j is in the Transportation and Public Utilities Cluster, otherwise, $a_{15,j}$ equals zero except for $a_{15,65}$ which equals one, and b_{15} equals the estimated number of students in the student population who are interested in transportation and public utilities training.

(16) $a_{16,1}X_1 + a_{16,2}X_2 + \dots + a_{16,j}X_j + \dots + a_{16,119}X_{119} \leq b_{16}$

where:

$a_{16,j}$ is the estimated enrollment in a typical j type program if j is in the Printing Craftsmen Cluster, otherwise, $a_{16,j}$ equals zero except for $a_{16,66}$ which equals one, and b_{16} equals the estimated number of students in the student population who are interested in printing crafts training.

(17) $a_{17,1}X_1 + a_{17,2}X_2 + \dots + a_{17,j}X_j + \dots + a_{17,119}X_{119} \leq b_{17}$

where:

$a_{17,j}$ is the estimated enrollment in a typical j type program when j is less than or equal to 50 (Note: the model deals with 50 possible program types) while all other $a_{17,j}$'s equal zero with the exception of $a_{17,67}$ which equals 1, and b_{17} equals the number of students to be served.

(18) $a_{18,1}X_1 + a_{18,2}X_2 + \dots + a_{18,j}X_j + \dots + a_{18,119}X_{119} \leq b_{18}$

where:

$a_{18,j}$ is the estimated female enrollment in a typical j type program when j is less than or equal to 50 and is equal to zero in all other cases except $a_{18,68}$ which equals one, and b_{18} equals the expected number of females to be served.

(19) $a_{19,1}X_1 + a_{19,2}X_2 + \dots + a_{19,j}X_j + \dots + a_{19,119}X_{119} = b_{19}$

where:

$a_{19,j}$ is the estimated male enrollment in a typical j type program when j is less than or equal to 50 and is equal to zero in all other cases except $a_{19,69}$ which equals one, and b_{19} equals the expected number of males to be served.

(i) $a_{i,1}X_1 + a_{i,2}X_2 + \dots . + a_{i,j}X_j + \dots . + a_{i,119}X_{119} \leq b_i$

where:

i varies from 20 through 69, $a_{i,j}$ equals zero except where i equals j or where i equals j + 50 in which cases $a_{i,j}$ equals one, and b_i equals the maximum number of programs which the manpower demand for this program can support or the number of sites whichever is smaller.

Special equation 1 restricts the expenditures of the optimum program mix to the available budget, special equations 2 through 16 restrict possible enrollment in programs to the number of students estimated to be interested in that type of training, equation 17 restricts total enrollment to the total number of students to be served, equation 18 restricts the number of female training slots to the number of females to be served, equation 19 restricts the number of male training slots to the number of males expected to be served, and equations 20 through 69 restrict enrollment in a program type to the number of programs which can be supported by manpower demands in the area to be served or the number of possible sites whichever is smaller.

DATA COLLECTION

Cost Per Program Type

This data is generated by averaging the cost of single teacher units of a program type in the state. Budgets to be averaged are found on program applications. The formula used is:

$$\text{Cost of Program Type X} = \frac{\text{Cost of Program } X_1 + \ldots\ldots + \text{Cost of Program } X_N}{N}$$

Total Available Vocational and Technical Education Financial Resources

This figure is an estimate made by the State Director based on past experience and recent events and includes local, state and federal monies.

Number of Students Interested in Particular Programs

This data is obtained by using ratios developed for fifteen interest clusters developed by the K-MUST System. As an example, sixteen percent of the available students are expected to be interested in technical programs. (Note: Available student information is developed by the Kansas Student Accounting System).

Number of Programs of Certain Types Needed to Meet Manpower Demand

The number of programs needed to meet the manpower demand for a certain type of worker is calculated by dividing the manpower demand (see Handbook for Vocational Technical Planners, Cycle II) by the average number of graduates available for placement from the type of program producing the worker (Kansas Student Accounting System).

Number of Students a Certain Type of Program Can Serve

This figure is the average enrollment in particular types of programs (Kansas Student Accounting System).

Number of Male Students to be Served

Sixty percent of the total number of students to be served (see Chapter 6) is estimated to be male.

Number of Female Students to be Served

Forty percent of the total number of students to be served is estimated to be female.

Total Number of Students to be Served

The estimated number of nigh school juniors and seniors in the state who will not receive an associate degree or a baccalaureate degree equals the number of students to be served. This figure can be found in the Handbook for Vocational and Technical Education Planners, Cycle II.

Number of Students Expected to be Placed

The average placement for particular program types (single teacher units) is used here. The Kansas Student Accounting System provides this data.

DATA PREPARATION

Coding Sheets

Coefficients ($a_{i,j}$ values for restraint equations and C_i values for the equation to be optimized) are coded using Coding Form LP-1 which is graphically represented in Figure 111. Every equation takes fifteen lines of coding. There are eight fields of nine digits each on a coding line. Zero coefficients are represented by blank fields. Non-zero coefficients are right justified. The b values are treated as coefficients and entered in the last field of the fifteenth coding line representing the equation. (Note: b equals zero for the equation to be optimized.) The equation to be optimized must be represented by the first 15 cards in this data.

Keypunching Coefficient Data

Data from the LP-1 Coding Sheets are keypunched according to the card layout shown in Figure 112.

/3088	/6000	/7780	/3000	/4755	/8000	42932	68091
65000	/4242	/5350	28979	/7824	/2600	/2520	12610
/8981	/8000	/8000	/8000	/8000	/0986	22132	9689
/7131	20039	/2950	/2189	25300	/1905	39178	22850
/2829	/3708	/5435	/2050	/6965	31996	21422	26030
/2127	/3406	/6969	/8947	/8092	/2950	/8592	12982
41388	59199	/					
							/6000000

(Coding Sheet LP-1 has eight fields of nine digits where coeficients of the equations are entered. In the example given here, the first special equation coeficients are presented. Note: The first special equation is related to cost per program type.)

Figure 111: Coding Sheet LP-1

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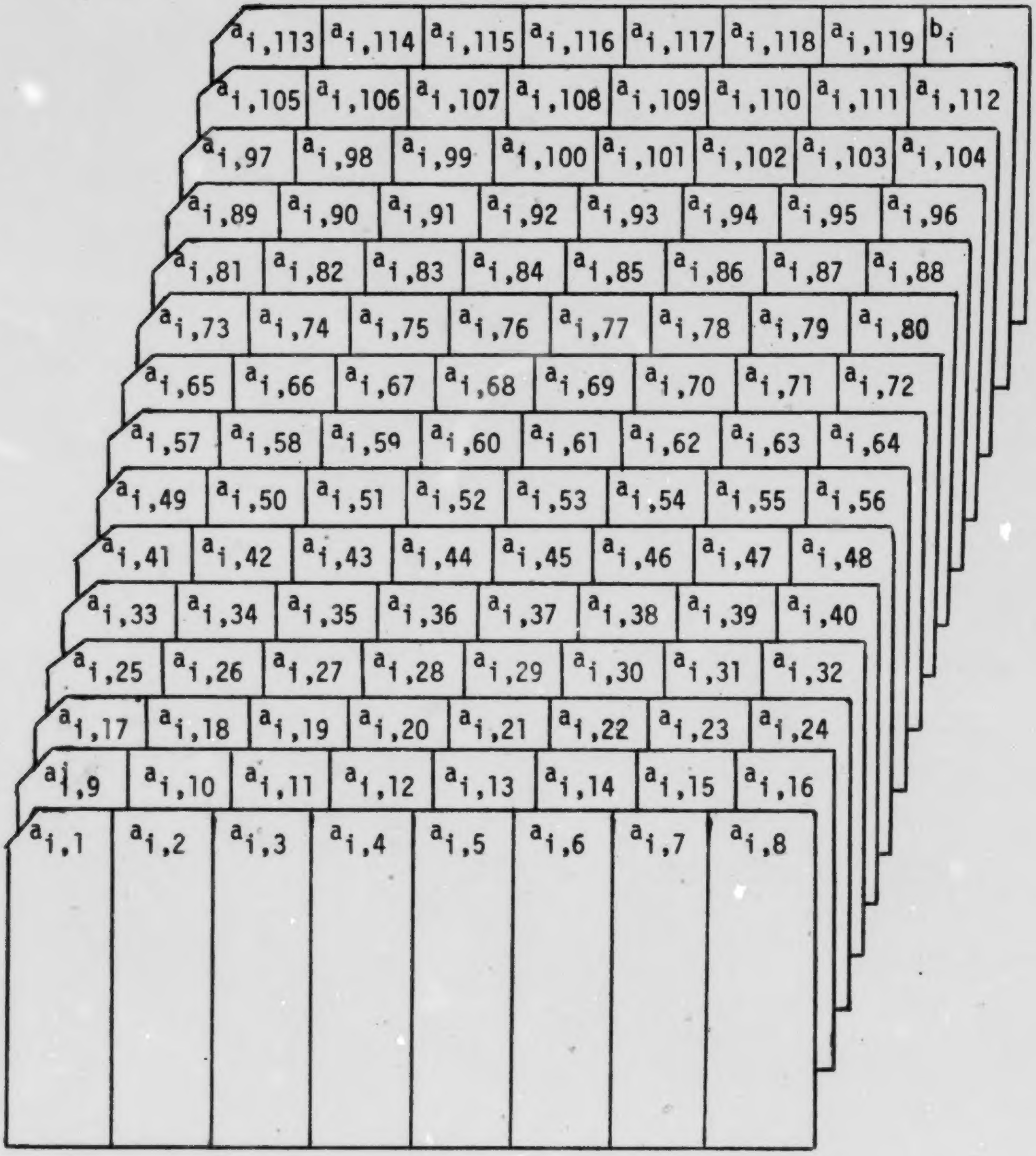
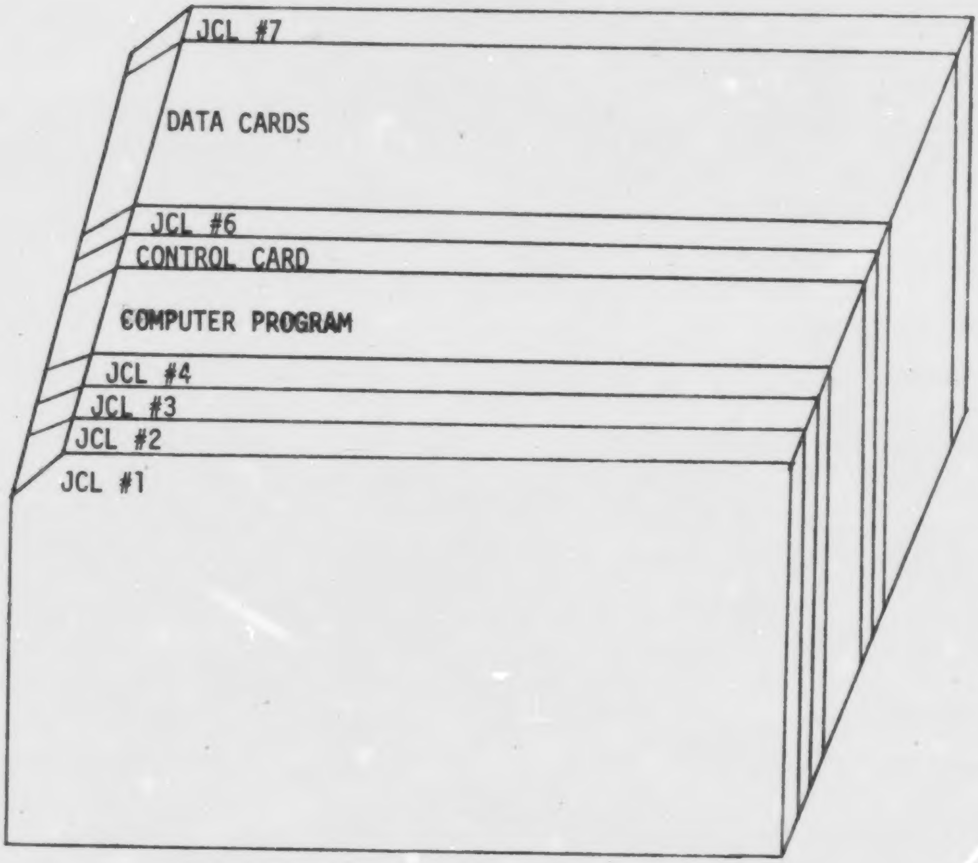

$a_{i,113}$ $a_{i,114}$ $a_{i,115}$ $a_{i,116}$ $a_{i,117}$ $a_{i,118}$ $a_{i,119}$ b_i
$a_{i,105}$ $a_{i,106}$ $a_{i,107}$ $a_{i,108}$ $a_{i,109}$ $a_{i,110}$ $a_{i,111}$ $a_{i,112}$
$a_{i,97}$ $a_{i,98}$ $a_{i,99}$ $a_{i,100}$ $a_{i,101}$ $a_{i,102}$ $a_{i,103}$ $a_{i,104}$
$a_{i,89}$ $a_{i,90}$ $a_{i,91}$ $a_{i,92}$ $a_{i,93}$ $a_{i,94}$ $a_{i,95}$ $a_{i,96}$
$a_{i,81}$ $a_{i,82}$ $a_{i,83}$ $a_{i,84}$ $a_{i,85}$ $a_{i,86}$ $a_{i,87}$ $a_{i,88}$
$a_{i,73}$ $a_{i,74}$ $a_{i,75}$ $a_{i,76}$ $a_{i,77}$ $a_{i,78}$ $a_{i,79}$ $a_{i,80}$
$a_{i,65}$ $a_{i,66}$ $a_{i,67}$ $a_{i,68}$ $a_{i,69}$ $a_{i,70}$ $a_{i,71}$ $a_{i,72}$
$a_{i,57}$ $a_{i,58}$ $a_{i,59}$ $a_{i,60}$ $a_{i,61}$ $a_{i,62}$ $a_{i,63}$ $a_{i,64}$
$a_{i,49}$ $a_{i,50}$ $a_{i,51}$ $a_{i,52}$ $a_{i,53}$ $a_{i,54}$ $a_{i,55}$ $a_{i,56}$
$a_{i,41}$ $a_{i,42}$ $a_{i,43}$ $a_{i,44}$ $a_{i,45}$ $a_{i,46}$ $a_{i,47}$ $a_{i,48}$
$a_{i,33}$ $a_{i,34}$ $a_{i,35}$ $a_{i,36}$ $a_{i,37}$ $a_{i,38}$ $a_{i,39}$ $a_{i,40}$
$a_{i,25}$ $a_{i,26}$ $a_{i,27}$ $a_{i,28}$ $a_{i,29}$ $a_{i,30}$ $a_{i,31}$ $a_{i,32}$
$a_{i,17}$ $a_{i,18}$ $a_{i,19}$ $a_{i,20}$ $a_{i,21}$ $a_{i,22}$ $a_{i,23}$ $a_{i,24}$
$a_{i,9}$ $a_{i,10}$ $a_{i,11}$ $a_{i,12}$ $a_{i,13}$ $a_{i,14}$ $a_{i,15}$ $a_{i,16}$
$a_{i,1}$ $a_{i,2}$ $a_{i,3}$ $a_{i,4}$ $a_{i,5}$ $a_{i,6}$ $a_{i,7}$ $a_{i,8}$

Field 1 = cc 1-9
Field 2 = cc 10-18
Field 3 = cc 19-27
Field 4 = cc 28-36
Field 5 = cc 37-45
Field 6 = cc 46-54
Field 7 = cc 55-63
Field 8 = cc 64-72

Figure 112: Card Layout for a Single Equation of the Linear Programming Model

COMPUTER PROCESSING

Any standard linear programming software can be used to support this system. The software described in Mathematical Programming by Claude McMillan (Wiley, 1970) was selected for this module since it was readily available at the Kansas State University Computer Center. Modifications were made in this software to meet the requirements of IBM 360 50H hardware and an OS operating system. Data representing the equation to be optimized and the restricting equations is inserted into the software as shown in Figure 113. Flow charts and program listings are not presented here due to copyright laws.



```
JCL #1.  //WATFIV     JOB (XXXXXXXX,10),DEB,CLASS=A
JCL #2.  //  EXEC WATFIN
JCL #3.  //GO.SYSIN DD *
JCL #4.  $JOB
JCL #5.  ....69...120....51
JCL #6.  $ENTRY
JCL #7.  $STOP
```

Figure 113: JCL Setup for Linear Programming Model

Chapter 15

PROGRAM APPLICATION EVALUATION MODULE

NEED FOR THE SYSTEM

Every winter, the staff of the Division of Vocational Education of the Kansas State Department of Education must determine which of the established programs funded by the Division will be continued and which of the new programs requested will be initiated. Traditionally the Division staff has evaluated annual program applications on the basis of nineteen weighted criteria. The calculations used to determine a program application rating have been done by hand. The evaluation of all program applications has required approximately twenty-five hundred manhours each winter and indications are that the manhours required will increase in future years.

In January of 1973, Dr. R. B. Daniels of the Division of Vocational Education asked Dr. R. E. Scott of Kansas State University to develop an automated system to decrease the manhours required to evaluate program applications. The system which was developed and is presented here requires approximately one tenth the manhours formally required to produce the program application evaluation needed.

GENERAL SYSTEM DESCRIPTION

The system requires the values for all criteria on each program and weights for each criterion to be entered as input. Weights are determined by a representative panel of administrators and have a value range from zero to ninety-nine. In addition, weights must be an integer. The sum of all weights must be less than or equal to ninety-nine. Criteria values are derived from either the program application form or data produced by the K-MUST Project and can be rated from zero to one with one being a high rating. When criteria do not apply to new programs, criteria values of zero are used.

New programs and established programs are evaluated separately and separate software runs are required.

Input preparation requires that criterion values and weight values be coded by hand and keypunched according to software formats. Coding sheet formats and keypunch formats are provided in later sections of this chapter.

The final step in this system is to insert the keypunched data into computer software JCL and submit the package to the Kansas State University Data Center dispatch window. Run time for a single pass is approximately ten minutes and costs approximately thirty dollars. Figure 114presents a system flow chart for this module.

Reports produced are:

1) A rank ordering of all established programs by program rating,

2) A rank ordering of all new program applications by program rating,

3) A rank ordering of established programs by program rating within program type,

4) A rank ordering of new program applications by program rating within program type, and

5) An analysis of each program application relative to other programs one copy of which is returned to the applying school.

PROGRAM RATING EQUATION

There are two types of data used as input in this system, i.e., weights for criteria and criteria values for each program. Each criterion is assigned a weight and criterion values relative to each program are calculated. The following formula is used to derive a program rating for each program application form.

$$\text{Program Rating}_i = W_1X_{1,i} + W_2X_{2,i} + W_3X_{3,i} + \dots\dots + W_{19}X_{19,i}$$

In this formula, Program Rating, refers to the rating of a particular program (i), W_j refers to the weight of criterion (j) and $X_{j,i}$ refers to the value of criterion (j) for program (i).

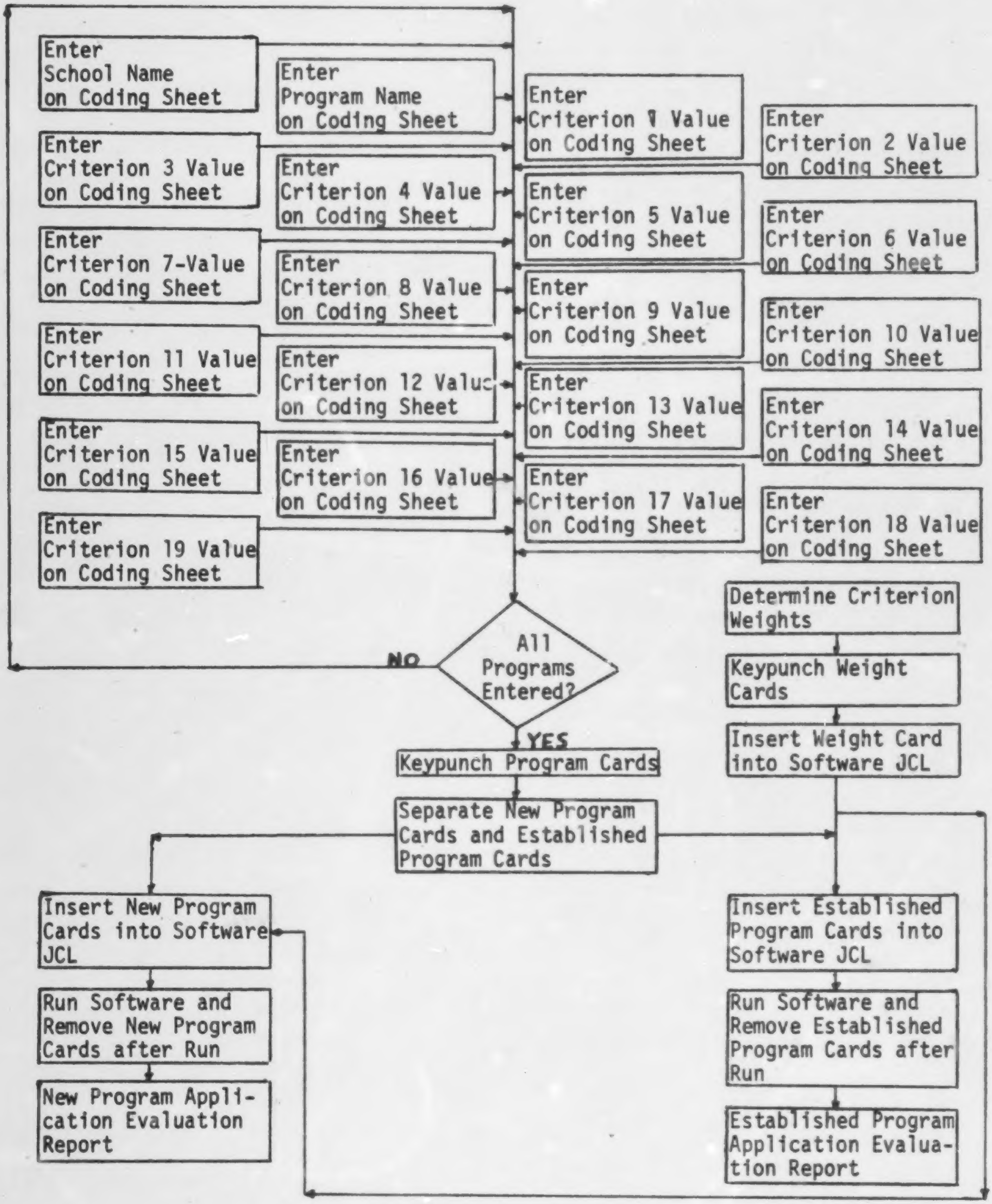

Enter School Name on Coding Sheet
Enter Program Name on Coding Sheet
Enter Criterion 1 Value on Coding Sheet
Enter Criterion 2 Value on Coding Sheet
Enter Criterion 3 Value on Coding Sheet
Enter Criterion 4 Value on Coding Sheet
Enter Criterion 5 Value on Coding Sheet
Enter Criterion 6 Value on Coding Sheet
Enter Criterion 7-Value on Coding Sheet
Enter Criterion 8 Value on Coding Sheet
Enter Criterion 9 Value on Coding Sheet
Enter Criterion 10 Value on Coding Sheet
Enter Criterion 11 Value on Coding Sheet
Enter Criterion 12 Valu on Coding Sheet
Enter Criterion 13 Value on Coding Sheet
Enter Criterion 14 Value on Coding Sheet
Enter Criterion 15 Value on Coding Sheet
Enter Criterion 16 Value on Coding Sheet
Enter Criterion 17 Value on Coding Sheet
Enter Criterion 18 Value on Coding Sheet
Enter Criterion 19 Value on Coding Sheet
All Programs Entered?
NO
YES
Keypunch Program Cards
Separate New Program Cards and Established Program Cards
Determine Criterion Weights
Keypunch Weight Cards
Insert Weight Card into Software JCL
Insert New Program Cards into Software JCL
Run Software and Remove New Program Cards after Run
New Program Application Evaluation Report
Insert Established Program Cards into Software JCL
Run Software and Remove Established Program Cards after Run
Established Program Application Evaluation Report

Figure 114: Systems Flow Chart for Program Application Evaluation

CRITERION DEFINITIONS

As indicated previously, there are nineteen criteria on which program applications are evaluated. These criteria and the techniques used to determine criteria values are described below.

Criterion 1: Does the institution have adequate philosophies, goals and characteristics? Philosophy is rated on how the institution interprets the goals and objectives stated in the 1968 Amendments to the 1963 Vocational Education Act. Goals are rated on how the institution intends to implement training related to the 1968 Amendments. Characteristics are rated on how the overall purpose of the institution relates to the 1968 Amendments. The total rating for this criterion ranges from zero to one with philosophy and goals having a possible contribution of .2 each and characteristics having a possible contribution of .6. The state supervisor will rate this criterion on the basis of his experience with the institution.

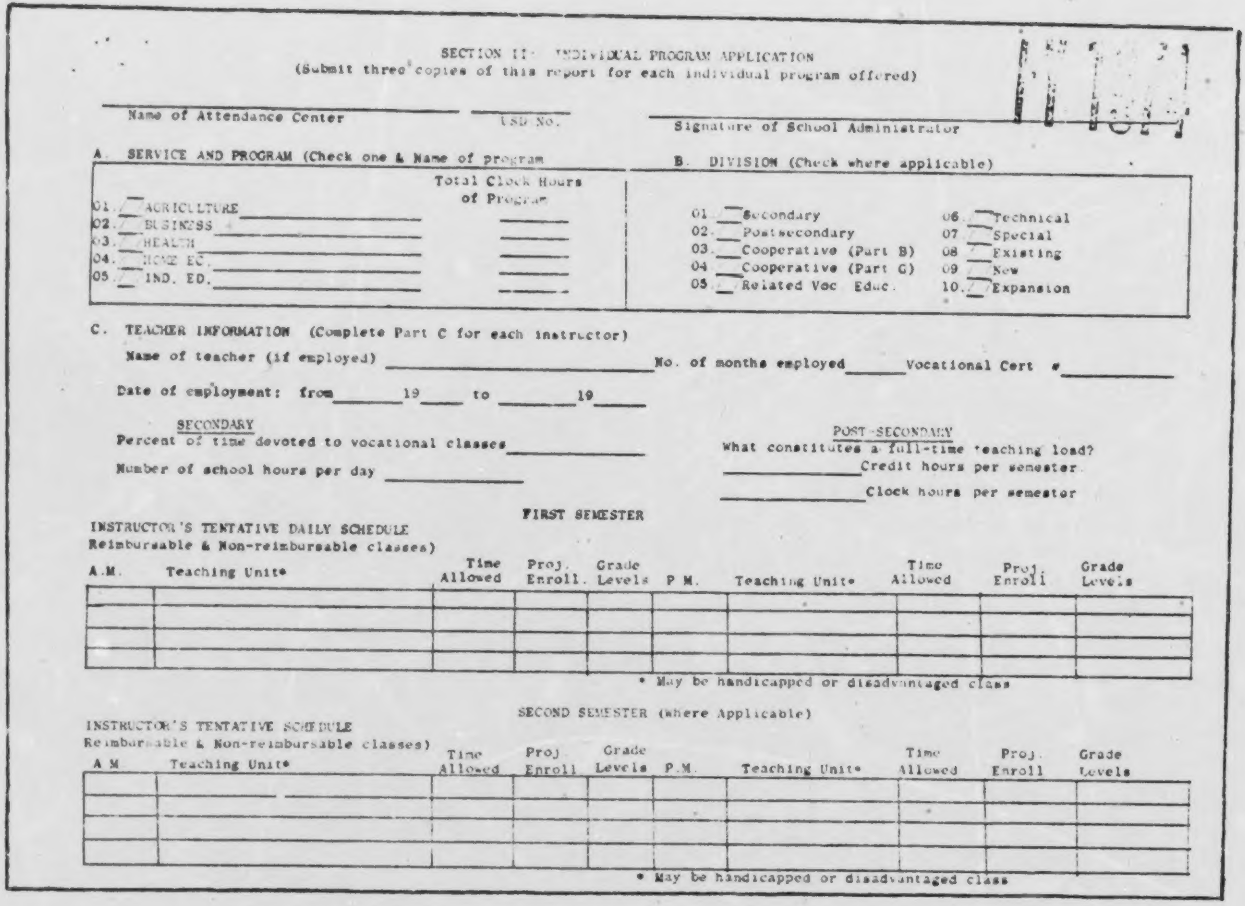
Criterion 2: Does the program administration provide adequate organization, planning and staffing? Organization is rated on the basis of the administration structure's ability to provide necessary supervision and support. Planning is rated on the administration structure's ability to plan vocational and technical education programs in light of student and community needs. Staffing is rated on the ability of the administration structure to provide the quantity of staff needed to achieve program goals. Organization and staffing can contribute as much as .3 each to the criterion value while planning can contribute as much as .4. The state supervisor will rate this criterion on the basis of past experience with the administrative structure.

Criterion 3: Is the administrative structure capable of providing adequate reporting, budgeting and program evaluation? Reporting is evaluated on the accuracy and punctuality of reports required by the State Department of Education. Budgeting is evaluated on the basis of the budgeting submitted on the program application form relative to realistic projecting of costs. Program evaluation is rated on the basis of the administrative structure policy on evaluating its programs locally. Budgeting and reporting can be rated as high as .3 while evaluation can have a .4 rating.

Criterion 4: Does the program have an adequate descriptive, measurable objective and clear purpose? The course outline attached to the program application should be evaluated by the state supervisor in terms of course description, objectives and purpose. Description can contribute as much as .2 while objectives and purpose can contribute as much as .3 to the overall criterion rating. When the description, purpose and objectives are highly compatible, an additional .2 may be contributed to the criterion rating.

Criterion 5: Does the program have adequate learning resources, facilities and equipment? Classrooms, libraries, shops, laboratories, and other facilities (including instructional equipment, supplies, teaching aids, and other materials) should be adequate in both quantity and quality to enable those students who are to be trained to meet the occupational objectives for which the education is intended. The total rating for this criterion should be between zero and one with item ratings as high as .3 for resources and equipment and .4 for facilities. The state supervisor must rate programs on the basis of his experience.

Criterion 6: Does the program have satisfactory program organization and structure, duration and intensity and conditions under which instruction can be given? Organization and structure is achieved when the program is designed as a logical sequence of educational experiences which will prepare students for their occupational objectives. Duration and intensity are achieved when the program is sufficiently extensive in duration and intensive within a scheduled unit of time to enable a student to develop the competency necessary to meet his occupational objective. Conditions under which instruction can take place include approved student/teacher ratios, adequate planning time for teachers, environments which simulate work environments, etc. The state supervisor should rate programs from zero to one on this criterion with organization and structure and conditions contributing as much as .3 each and duration and intensity contributing as much as .4. Data on duration and intensity is found on the program application in terms of clock hours of instruction. Data on organization and structure can be derived from the course outline submitted with the program application. Data on conditions for instruction can be found on the program application form in terms of number of students enrolled and teacher schedules.



SECTION II - INDIVIDUAL PROGRAM APPLICATION
(Submit three copies of this report for each individual program offered)

Name of Attendance Center ____ USD No. ____ Signature of School Administrator ____

A. SERVICE AND PROGRAM (Check one & Name of program

		Total Clock Hours of Program
01. ☐	AGRICULTURE ____	____
02. ☐	BUSINESS ____	____
03. ☐	HEALTH ____	____
04. ☐	HOME EC. ____	____
05. ☐	IND. ED. ____	____

B. DIVISION (Check where applicable)

01. ☐	Secondary	06. ☐	Technical
02. ☐	Postsecondary	07. ☐	Special
03. ☐	Cooperative (Part B)	08. ☐	Existing
04 ☐	Cooperative (Part G)	09 ☐	New
05. ☐	Related Voc Educ.	10. ☐	Expansion

C. TEACHER INFORMATION (Complete Part C for each instructor)

Name of teacher (if employed) ____ No. of months employed ____ Vocational Cert # ____

Date of employment: from ____ 19 ____ to ____ 19 ____

SECONDARY

Percent of time devoted to vocational classes ____

Number of school hours per day ____

POST-SECONDARY

What constitutes a full-time teaching load?

____ Credit hours per semester

____ Clock hours per semester

FIRST SEMESTER

INSTRUCTOR'S TENTATIVE DAILY SCHEDULE
Reimbursable & Non-reimbursable classes)

A.M.	Teaching Units*	Time Allowed	Proj. Enroll.	Grade Levels	P.M.	Teaching Units*	Time Allowed	Proj. Enroll	Grade Levels

* May be handicapped or disadvantaged class

SECOND SEMESTER (where Applicable)

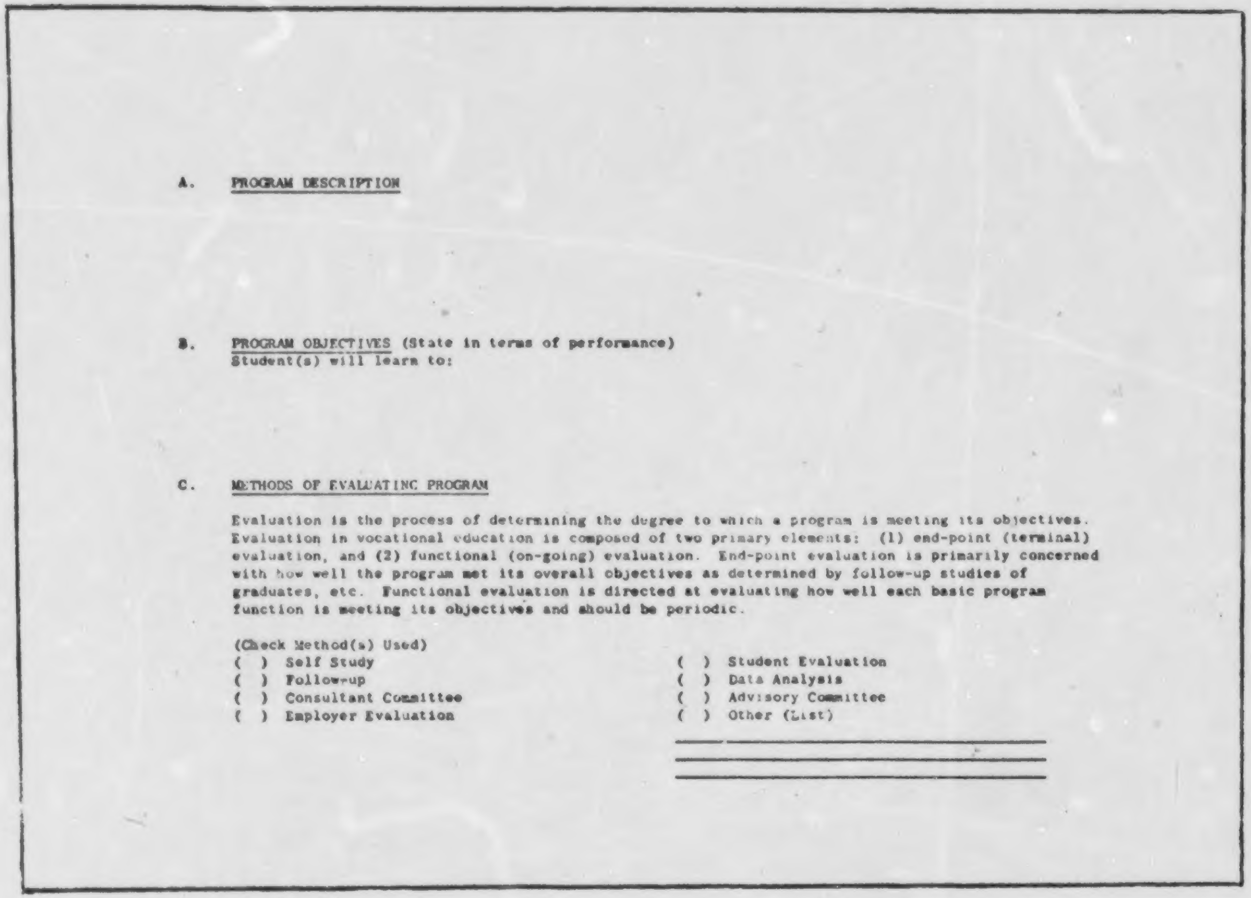
INSTRUCTOR'S TENTATIVE SCHEDULE
Reimbursable & Non-reimbursable classes)

A.M	Teaching Units*	Time Allowed	Proj. Enroll	Grade Levels	P.M.	Teaching Units*	Time Allowed	Proj. Enroll	Grade Levels

* May be handicapped or disadvantaged class

Figure 115: Program Application Form.

BEST COPY AVAILABLE



A. PROGRAM DESCRIPTION

B. PROGRAM OBJECTIVES (State in terms of performance)
Student(s) will learn to:

C. METHODS OF EVALUATING PROGRAM

Evaluation is the process of determining the degree to which a program is meeting its objectives. Evaluation in vocational education is composed of two primary elements: (1) end-point (terminal) evaluation, and (2) functional (on-going) evaluation. End-point evaluation is primarily concerned with how well the program met its overall objectives as determined by follow-up studies of graduates, etc. Functional evaluation is directed at evaluating how well each basic program function is meeting its objectives and should be periodic.

(Check Method(s) Used)
- ( ) Self Study
- ( ) Follow-up
- ( ) Consultant Committee
- ( ) Employer Evaluation
- ( ) Student Evaluation
- ( ) Data Analysis
- ( ) Advisory Committee
- ( ) Other (List)

Figure 115: Program Application Form (Cont.)

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D. PLACEMENT OBJECTIVES (Be Specific)

E. MISSION STATEMENT

A program mission is a responsibility derived from legislation, State Board of Education and local Board of Education policies. It indicates reasons for existence, general functions and jurisdictional limits. The local educational agency philosophy may also affect the program mission. Thus, each local educational agency may have a somewhat different mission with respect to vocational education. The mission of vocational education in this local educational agency is:

Figure 115: Program Application Form (Cont.)

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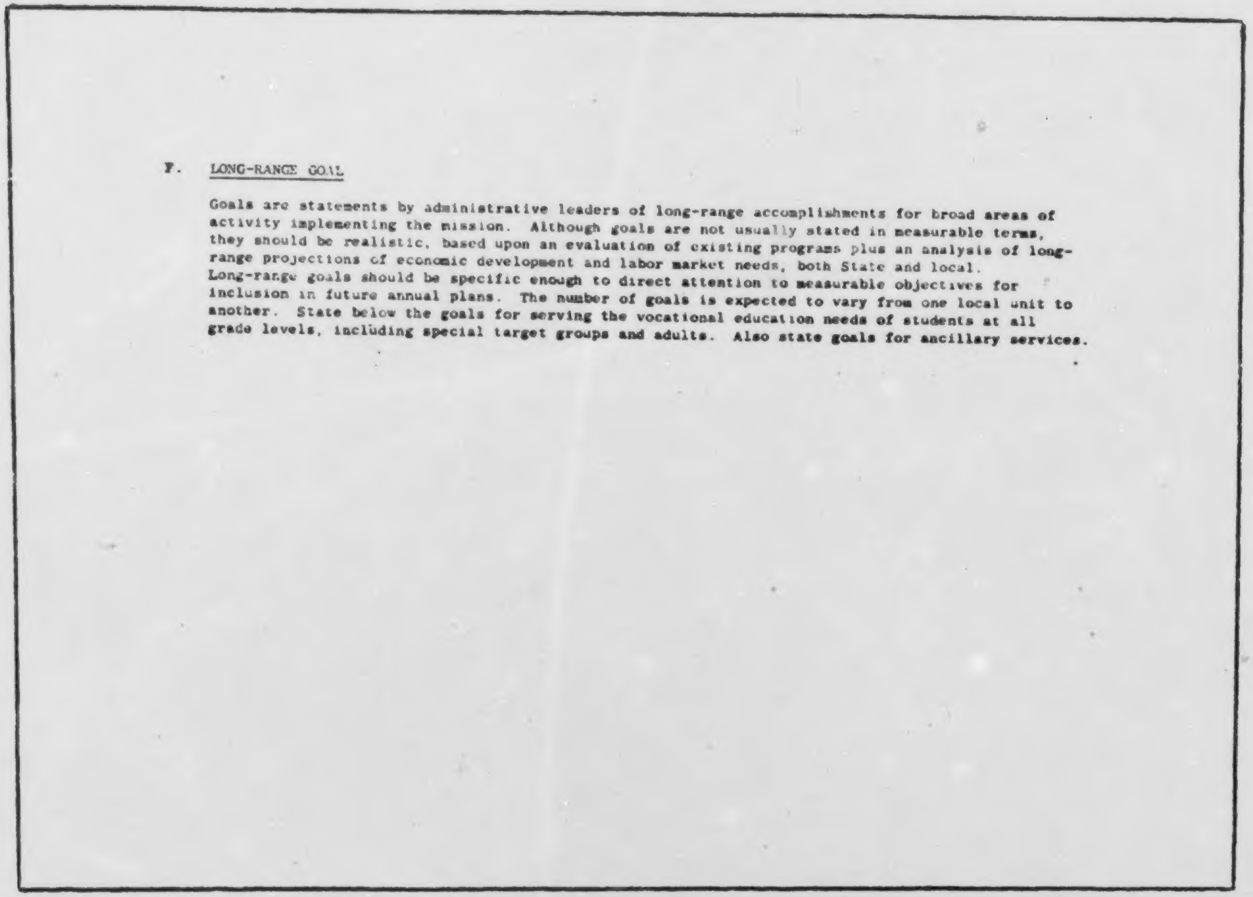
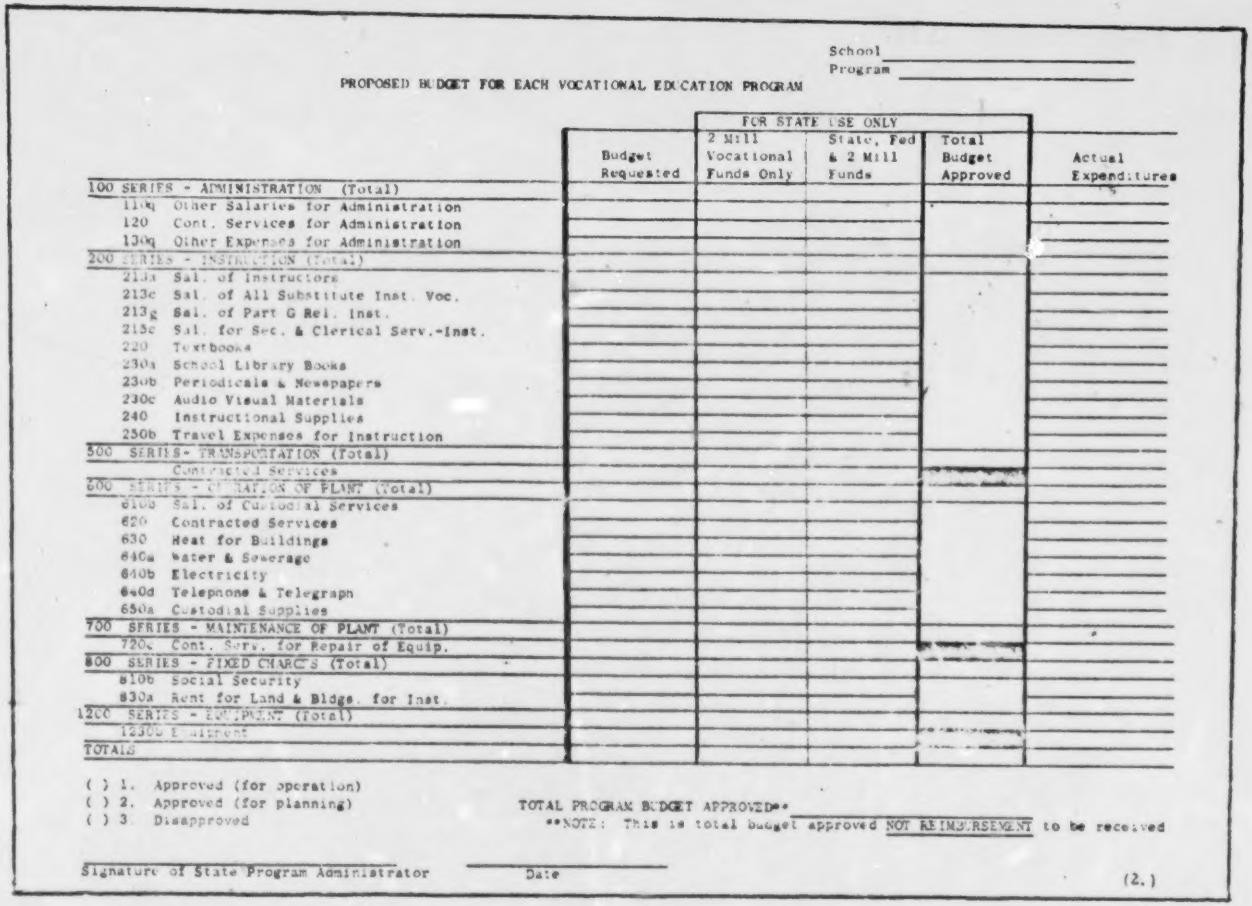


F. LONG-RANGE GOAL

Goals are statements by administrative leaders of long-range accomplishments for broad areas of activity implementing the mission. Although goals are not usually stated in measurable terms, they should be realistic, based upon an evaluation of existing programs plus an analysis of long-range projections of economic development and labor market needs, both State and local. Long-range goals should be specific enough to direct attention to measurable objectives for inclusion in future annual plans. The number of goals is expected to vary from one local unit to another. State below the goals for serving the vocational education needs of students at all grade levels, including special target groups and adults. Also state goals for ancillary services.

Figure 115: Program Application Form (Cont.)



School ____________________

Program ____________________

PROPOSED BUDGET FOR EACH VOCATIONAL EDUCATION PROGRAM

	Budget Requested	FOR STATE USE ONLY		Total Budget Approved	Actual Expenditures
		2 Mill Vocational Funds Only	State, Fed & 2 Mill Funds		
100 SERIES - ADMINISTRATION (Total)					
110q Other Salaries for Administration					
120 Cont. Services for Administration					
130q Other Expenses for Administration					
200 SERIES - INSTRUCTION (Total)					
213a Sal. of Instructors					
213c Sal. of All Substitute Inst. Voc.					
213g Sal. of Part G Rei. Inst.					
215c Sal. for Sec. & Clerical Serv.-Inst.					
220 Textbooks					
230a School Library Books					
230b Periodicals & Newspapers					
230c Audio Visual Materials					
240 Instructional Supplies					
250b Travel Expenses for Instruction					
500 SERIES- TRANSPORTATION (Total)					
Contracted Services					
600 SERIES - OPERATION OF PLANT (Total)					
610b Sal. of Custodial Services					
620 Contracted Services					
630 Heat for Buildings					
640a Water & Sewerage					
640b Electricity					
640d Telephone & Telegraph					
650a Custodial Supplies					
700 SERIES - MAINTENANCE OF PLANT (Total)					
720c Cont. Serv. for Repair of Equip.					
800 SERIES - FIXED CHARGES (Total)					
810b Social Security					
830a Rent for Land & Bldgs. for Inst.					
1200 SERIES - EQUIPMENT (Total)					
1230b Equipment					
TOTALS					

( ) 1. Approved (for operation)
( ) 2. Approved (for planning)
( ) 3. Disapproved

TOTAL PROGRAM BUDGET APPROVED** ____________________

**NOTE: This is total budget approved NOT REIMBURSEMENT to be received

Signature of State Program Administrator ____________________ Date ____________________

(2.)

Figure 115: Program Application Form (Cont.)

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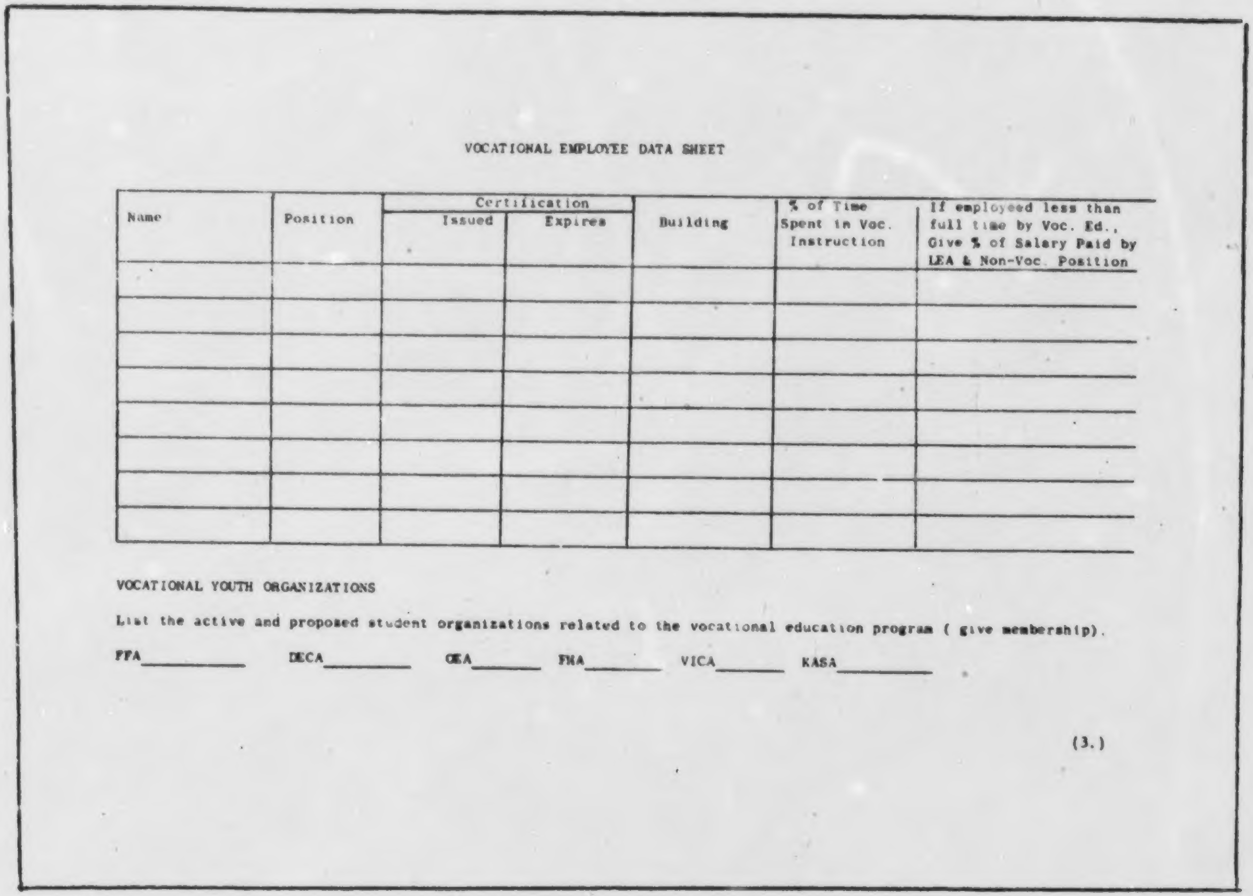

VOCATIONAL EMPLOYEE DATA SHEET

Name	Position	Certification		Building	% of Time Spent in Voc. Instruction	If employed less than full time by Voc. Ed., Give % of Salary Paid by LEA & Non-Voc. Position
		Issued	Expires			

VOCATIONAL YOUTH ORGANIZATIONS

List the active and proposed student organizations related to the vocational education program (give membership).

FFA__________ DECA__________ OEA________ FHA________ VICA________ KASA__________

(3.)

Figure 115: Program Application Form (Cont.)

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Criterion 7: Does the program fit well into the total vocational and technical program mix in the local area and does the program make use of an advisory committee? One half (.5) of the criterion rating should be based on how well the program fits into the program mix in the area. Consideration should be given to the variety of offerings, programs for males and females, programs for special groups and programs for different levels of skills. The other half of this criterion rating should be based on the number of advisory committee meetings held in the past year. For the first meeting, .3 should be added to the rating, for the second and third meetings, .1 should be added and for all subsequent meetings, nothing is added to the criterion value. Data on number of advisory committee meetings is found on the program application.

Criterion 8: Does the program have a satisfactory youth club? This criterion is rated from zero to one depending on the quality of the youth club associated with the program. Zero for this criterion indicates that there is no youth club associated with the program.

Criterion 9: Is the teacher qualified, does he use appropriate methodology in instruction and does he evaluate and update his program yearly? Teacher qualifications are rated on inservice training received, college credit received for course work, and on-the-job experience obtained during the past year. Methodology is rated on the basis of the appropriateness of training techniques used in the course. Evaluation and updating the curriculum is rated on the value of the course content in light of advancing technology. Data on methodology is found in the course outline attached to the program application while data on inservice training, college credit and on-the-job experience is found on the application itself. The course outline should also shed light on the appropriateness of the course content relative to advancing technology. The total criterion value ranges from zero to one with individual items being valued at a maximum of .3 for teacher qualification and methodology and .4 for evaluation of the program by the teacher.

Criterion 10: Is the clientele served by the program representative of the general population and is the program serving a student interest? When the clientele served by the program is representative of the general population, the number of disadvantaged and handicapped persons in the program is proportional to the number of disadvantaged and handicapped persons in the general population. Half of this criterion value can be determined using data derived from the student accounting system which gives percent of persons in the program who are (1) academically disadvantaged, (2) culturally disadvantaged, (3) economically disadvantaged, (4) mentally handicapped, and (5) physically handicapped, and the data in Table 11 which provides the criterion value contributions for each handicapped or disadvantaged group by percentage in the program. Student interest criterion value contributions by program type are found in Table 12. This value is derived from a study of K-VIEW references with programs having high numbers of references rated higher than programs with lower numbers of references. The item rating cannot exceed .5 and cannot be less than zero. The sum of the student interest contribution and the clientele served contribution ranges from one to zero.

Criterion 11: Is the program supported by adequate ancillary services? Ancillary services are defined as guidance and counseling, enrollment procedures, follow-up and placement procedures, and the keeping of student records. The state supervisor will rate the program with a maximum item contribution of .2 for guidance and counseling, enrollment procedure, and keeping of student records and a contribution of .4 for follow-up and placement. The total criterion value cannot exceed one nor be less than zero.

Criterion 12: Does the program produce graduates who are helping to meet a significant manpower need in the state? Table 13 presents criterion values for different programs relative to manpower needs of the state. Programs with high manpower needs in the state receive high ratings while programs with less manpower need in the state receive lower ratings. The ratings are relative to the highest single need in the state. The table has a subdivision for each service area.

Criterion 13: Does the program produce graduates who are helping to meet a significant manpower need in the region? Table 13 presents criterion values for different programs relative to manpower needs in different regions. Programs with high manpower needs in the region receive high ratings while programs with less manpower need receive lower ratings. The ratings are relative to the average occupational need in the region. The table has a subdivision for each service area.

Table 11

Contribution Values for Criterion 10 Based on Disadvantaged and Handicapped Percentages of Regional Populations

Disadvantaged or Handicapped Group	Percent of Students in Program						
	0-2	3-4	5-6	7-8	9-10	11-12	13-above
East Central							
Academically Disadvantaged	.01	.05	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.04	.07	.10	.10	.10	.10
Economically Disadvantaged	.01	.04	.07	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10
Far Northwest							
Academically Disadvantaged	.01	.05	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.04	.05	.07	.08	.10
Economically Disadvantaged	.10	.10	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.10	.10	.10	.10	.10	.10
Far Southwest							
Academically Disadvantaged	.01	.10	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.05	.08	.10	.10	.10
Economically Disadvantaged	.10	.10	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10
Flint Hills							
Academically Disadvantaged	.01	.10	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.05	.07	.09	.10	.10
Economically Disadvantaged	.01	.05	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10

Table 11 (continued)

Disadvantaged or Handicapped Group	Percent of Students in Program						
	0-2	3-4	5-6	7-8	9-10	11-12	13-above
Near Southwest							
Academically Disadvantaged	.01	.05	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.05	.08	.10	.10	.10
Economically Disadvantaged	.10	.10	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10
North Central							
Academically Disadvantaged	.01	.10	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.05	.07	.09	.10	.10
Economically Disadvantaged	.10	.10	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10
Northeast							
Academically Disadvantaged	.01	.05	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.04	.05	.07	.08	.10
Economically Disadvantaged	.01	.10	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.10	.10	.10	.10	.10	.10
Northwest Central							
Academically Disadvantaged	.01	.10	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.05	.07	.09	.10	.10
Economically Disadvantaged	.10	.10	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10
Southeast							
Academically Disadvantaged	.10	.10	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.04	.05	.07	.09	.10
Economically Disadvantaged	.01	.10	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10

Table 11 (continued)

Disadvantaged or Handicapped Group	Percent of Students in Program						
	0-2	3-4	5-6	7-8	9-10	11-12	13-above
Southeast Central							
Academically Disadvantaged	.01	.10	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.03	.05	.08	.10	.10	.10
Economically Disadvantaged	.01	.05	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10
Southwest Central							
Academically Disadvantaged	.01	.10	.10	.10	.10	.10	.10
Culturally Disadvantaged	.01	.04	.07	.10	.10	.10	.10
Economically Disadvantaged	.10	.10	.10	.10	.10	.10	.10
Mentally Handicapped	.01	.05	.10	.10	.10	.10	.10
Physically Handicapped	.01	.05	.10	.10	.10	.10	.10

Table 12

STUDENT INTEREST CRITERION VALUES BY PROGRAM

OCCUPATION	CRITERION VALUE
Accounting and Computing	.46
Air Conditioning	.33
Agriculture Mechanics	.33
Agriculture Products	.13
Agriculture Sales and Service	.23
Agriculture Resources	.13
Appliance Repair	.33
Auto Body	.33
Auto Mechanics	.33
Associate Degree Nurse	.46
Aviation Occupations	.33
Business Machine Repair	.33
Carpentry	.17
Civil Technology	.50
Clothing Management	.46
Commercial Art	.50
Communications	.46
Custodial Services	.22
Data Processing	.46

Table 12 (continued)

OCCUPATION	CRITERION VALUE
Dental Assistant	.46
Dental Hygienist	.46
Dental Lab Technician	.46
Diesel Mechanics	.33
Distributive Education	.23
Drafting	.50
Electricity	.17
Electronics (Technical)	.50
Electronics (Vocational)	.17
Food Management	.07
Forestry	.13
Foremanship	.25
Graphic Arts	.22
Heavy Equipment	.33
Horticulture	.13
Licensed Practical Nurse	.46
Lineman	.07
Machine Shop	.28
Masonry	.18
Material Support	.46
Medical Assistant	.46
Medical Lab Assistant	.46
Medical Secretary	.46

Table 12 (continued)

OCCUPATION	CRITERION VALUE
Nurse Aide	.22
Office Machine Repairman	.33
Painter	.17
Personnel	.46
Photography	.22
Police Science	.67
Radio and Television	.33
Secretary/Steno	.46
Sheet Metal	.28
Small Engine	.33
Supervisor	.25
Truck Driving	.12
Typing and Other Clerical	.46
Upholstering	.22
Welding	.28

Table 13A

CRITERION VALUES FOR MANPOWER NEED
BY PROGRAM AND REGION
AGRICULTURE EDUCATION

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southwest	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Northwest Central	North Central	Northeast	
Ag Forestry and Resources	.12	.17	.11	.10	.20	.07	.07	.07	.04	.05	.07	.07
Agriculture Mech	.57	1.00	.49	.42	.83	.24	.26	.30	.30	.24	.28	.31
Ag Products, Sales and Service	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horticulture	.35	.57	.31	.33	.54	.19	.18	.21	.14	.16	.05	.16
Production Ag	1.00	.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 13B

CRITERION VALUES FOR MANPOWER NEED BY PROGRAM AND REGION BUSINESS AND OFFICE EDUCATION

PROGRAM	REGION											
	Statewide Totals	East Central	Southwest	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Accounting and Computing	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Communications	.18	.19	.15	.19	.17	.16	.16	.15	.15	.18	.15	.14
Data Processing	.14	.14	.13	.16	.14	.15	.13	.13	.13	.15	.13	.14
Distributive Ed	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Material Support	.02	.03	.03	.02	.02	.01	.01	.02	.01	.02	.01	.01
Personnel	.04	.06	.02	.08	.03	.02	.01	.01	.01	.03	.01	0
Office Machines and Keypunch	.24	.26	.20	.29	.24	.21	.18	.17	.15	.21	.19	.16
Secretary/Steno	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Supervision	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Typing and Other Clerical, N.E.C.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 13C

CRITERION VALUES FOR MANPOWER NEED
BY PROGRAM AND REGION
HEALTH EDUCATION

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southwest	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Dental Assistant	.44	.44	.49	.44	.44	.44	.44	.57	.46	.44	.44	.83
Dental Hygienist	.18	.18	.20	.18	.18	.20	.19	.24	.19	.20	.19	.33
Dental Lab Tech	.03	.07	.05	.05	.06	.05	.06	.07	.04	.05	.05	.08
LPN Training	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Medical Assistant	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Medical Lab Ass't	.24	.24	.27	.24	.24	.23	.25	.31	.27	.23	.24	.42
Medical Record As't	.25	.29	.26	.22	.23	.22	.25	.31	.19	.22	.23	.42
Nurse Aide	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Registered Nurse (Assoc. Degree)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 130

CRITERION VALUES FOR MANPOWER NEED BY PROGRAM AND REGION HOME ECONOMICS EDUCATION

PROGRAM	REGION											
	Statewide Totals	East Central	Southwest	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Child Care and Guidance	.64	.56	.61	.87	.57	.75	.76	1.00	1.00	1.00	.79	1.00
Clothing Managem't and Production	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.95	1.00	.93	1.00	.95
Food Management and Production	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 13E

CRITERION VALUES FOR MANPOWER NEEDS
BY PROGRAM AND REGION
INDUSTRIAL EDUCATION

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Air Conditioning	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Appliance Repair	.80	.69	1.00	.97	.76	1.00	1.00	1.00	1.00	1.00	.65	1.00
Auto Body	.26	.25	.27	.39	.22	.44	.50	.44	.50	.40	.18	.33
Auto Mechanics	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Aviation Occupation	.12	0	0	0	1.00	0	0	0	0	0	0	0
Business Machine Repair	.18	.18		.07	.25	.22	.25	.27	0	.06	.09	0
Cabinetmaking	.20	.21	.27	.17	.18	.33	.25	.16	.16	.26	.12	.25
Carpentry	1.00	1.00	1.00	1.00	1.00	0	.25	1.00	.66	.53	1.00	0
Civil Technology	1.00	.97	.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 13E (Cont.)

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Commercial Art	.11	.10	.11	.12	.10	.22	.12	.16	.16	.13	.12	.16
Cosmetology	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Custodial Services	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Diesel Mechanics	.85	.86	1.00	0	.83	1.00	1.00	1.00	1.00	1.00	.71	1.00
Drafting	.63	.65	.75	.63	.70	.44	.50	.22	.16	.20	.59	.16
Electricity	.92	.86	.75	.85	1.00	.66	.62	.88	.66	.60	1.00	.50
Electronics Tech	.70	.61	.97	.78	.75	.66	1.00	.38	.50	.40	.68	.75
Electronics (Voc)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Foremanship	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Graphic Arts	.94	1.00	1.00	1.00	.57	1.00	1.00	1.00	1.00	1.00	.75	1.00
Heavy Equipment	.87	1.00	.59	.97	.72	1.00	.75	1.00	.62	.80	1.00	.50
Lineman	1.00	1.00	1.00	1.00	.79	0	1.00	.72	1.00	1.00	.93	1.00
Machine Shop	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 13E (Cont.)

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Masonry	.53	.60	.36	.51	.44	.44	.50	.66	.66	.46	.75	.41
Painting	1.00	1.00	.54	1.00	.86	.66	.75	1.00	1.00	.80	1.00	.41
Photography	.19	.17	.20	.21	.17	.44	.25	.27	.33	.26	.18	.33
Plumbing	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Police Science	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Radio and TV	.12	.17	.04	.29	.08	0	0	.16	0	.06	0	0
Sheet Metal	1.00	.77	.93	.85	1.00	1.00	.75	.88	.83	.73	1.00	.50
Small Engines	.40	.34	.50	.48	.38	.77	.62	.55	.66	.53	.31	.58
Truck Driving	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upholstering	.17	.17	.20	.17	.14	.33	.25	.16	.33	.26	.12	.25
Welding	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Criterion 14: Does the program have a good placement rate? This criterion value is the percent of graduates who are available for placement who are actually placed in a job related to their training. Data is obtained from the Kansas Student Accounting System.

Criterion 15: How does the cost per student enrolled compare with other programs of the same type? The program budget is divided by the number of students enrolled to determine the cost per student enrolled. An average cost per student enrolled is computed for programs of the same type. The cost per student enrolled is divided into the average cost per student enrolled and .5 is subtracted from the result to determine this criterion value. (Note: Computed criterion values which exceed one are set equal to one and criterion values which are less than zero are set equal to zero). Data on budget is found on the program application while data on the number of students enrolled is provided by the Kansas Student Accounting System.

Criterion 16: How does the cost per graduate compare with other programs of the same type? The program budget is divided by the number of graduates for the past year to determine the cost per graduate. An average cost per graduate is computed for programs of the same type. The cost per graduate is divided into the average cost per graduate and .5 is subtracted from the result to determine this criterion value. (Note: Computed criterion values which exceed one are set equal to one and criterion values which are less than zero are set equal to zero). Data on program budget is found on the program application while data on the number of graduates is provided by the Kansas Student Accounting System.

Criterion 17: How does the cost per graduate placed compare with other programs of the same type? The program budget is divided by the number of graduates placed for the past year to determine the cost per graduate. An average cost per graduate placed is computed for programs of the same type. The cost per graduate placed is divided into the average cost per graduate placed and .5 is subtracted from the result to determine this criterion value. (Note: Computed criterion values which exceed one are set equal to one and criterion values which are less than zero are set equal to zero). Data on program budget is found on the program application while data of the number of graduates placed is provided by the Kansas Student Accounting System.

Criterion 18: Does the program have significant competition in the region from other programs of the same type? The values for this criterion are found in Table 14. The table values were derived by setting all programs where the net manpower demand was greater than zero equal to one and decreasing the value proportionally for programs contributing to an oversupply.

Criterion 19: Does the program have an adequate retention rate? Retention rate is the dropout rate subtracted from one and is used as the criterion value. Data on dropout rates is provided by the Kansas Student Accounting System.

CODING SHEETS

When the staff of the Division of Vocational Education is entering data on different programs, a coding sheet should be used to facilitate ease of keypunching. (See Figure 116 for an example coding sheet). A line of the coding sheet represents data on a single program application. First, the name of the school should be entered in columns 1 through 10, then the name of the program should be entered in columns 11 through 20, finally, criteria values from the program should be entered in columns 21 through 77 as indicated in Figure 116. Leading zeros must be entered on the coding sheet.

KEYPUNCHING

Keypunching from coding sheets to card should follow the coding sheet format with one line equaling one card. Figure 117 illustrates card columns for various data entries.

DETERMINING WEIGHTS

Weights are determined by a representative panel of vocational administrators. Each administrator selects a weight from zero to ninety-nine for each criteria, the weights for that criteria are summed and divided by the number of panel members and the result is a weighting factor for the program rating equation.

Table 14A

COMPETITION CRITERION VALUES BY PROGRAM AND REGION AGRICULTURAL EDUCATION

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Agriculture Mech.	1.00	1.00	.98	.25	1.00	.50	.80	.85	1.00	.50	1.00	1.00
Agriculture Prod.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Agriculture Res.	1.00	1.00	1.00	.75	1.00	1.00	.50	.98	1.00	1.00	1.00	.98
Agr. Sales & Serv.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Forestry	1.00	1.00	1.00	.75	1.00	1.00	.50	.98	1.00	1.00	1.00	1.00
Horticulture	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.98	1.00	.80
Production Ag.	.50	1.00	.50	.50	1.00	1.00	1.00	.50	.50	.80	.50	.50

Table 14B

COMPETITION CRITERION VALUES
BY PROGRAM AND REGION
BUSINESS AND OFFICE EDUCATION

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Accounting and Computing	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Communications	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Data Processing	.08	.85	1.00	1.00	0	1.00	1.00	1.00	.68	1.00	.81	1.00
Distributive Ed.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Material Support	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	1.00	1.00
Office Machines and Keypunch	1.00	1.00	1.00	1.00	.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Personnel	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	1.00	1.00	1.00	1.00
Secretary/Steno	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.19	1.00

Table 14B (Cont.)

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Supervision	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.16
Typing and Other Clerical, N.E.C.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 14C

COMPETITION CRITERION VALUES
BY PROGRAM AND REGION
HEALTH EDUCATION

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Dental Assistant	1.00	1.00	1.00	1.00	.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dental Hygienist	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Dent. Lab. Tech.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LPN Training	1.00	1.00	.50	.25	1.00	1.00	.25	1.00	.40	1.00	.50	.30
Medical Assistant	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Med. Lab. Assist.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Med. Record Sec'y.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.30	1.00
Nurse Aide	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Registered Nurse (Associate Deg.)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.50	1.00	1.00	1.00	1.00

Table 14D

COMPETITION CRITERION VALUES
BY PROGRAM AND REGION
HOME ECONOMICS EDUCATION

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Child Care and Guidance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Clothing Managem't. and Production	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Food Management and Production	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 14E

COMPETITION CRITERION VALUES
BY PROGRAM AND REGION
INDUSTRIAL EDUCATION

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Air Conditioning	1.00	1.00	1.00	.54	.96	1.00	1.00	.04	1.00	1.00	.40	1.00
Appliance Repair	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Auto Body	.70	.50	.72	.92	.80	.92	.98	.96	.34	.58	.94	.76
Auto Mechanics	0	0	.46	.10	0	.54	0	0	0	.74	0	0
Aviation Occupation	.66	.06	.90	1.00	.70	.90	.96	.92	.98	.44	.84	.66
Business Machine Repair	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0	1.00	1.00
Cabinetmaking	.98	1.00	.86	.76	.94	1.00	1.00	1.00	1.00	1.00	1.00	.86

Table 14E (Cont.)

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Carpentry	1.00	1.00	1.00	.86	1.00	.94	.02	1.00	.90	0	.92	.52
Civil Technology	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Commercial Art	.98	1.00	1.00	1.00	.94	1.00	1.00	1.00	1.00	1.00	.76	1.00
Cosmetology	.82	.12	0	.48	.74	1.00	.64	1.00	.84	1.00	1.00	1.00
Custodial Services	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Diesel Mechanics	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.80	.66	1.00	.56	1.00
Drafting	.86	1.00	.72	.98	.80	.96	1.00	.66	.86	1.00	.94	.94
Electricity	1.00	1.00	.90	.80	1.00	1.00	.66	1.00	.76	1.00	1.00	1.00
Electronics Tech	1.00	1.00	1.00	1.00	.88	1.00	1.00	.98	1.00	1.00	1.00	1.00
Electronics (Voc)	1.00	1.00	.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.50	1.00
Foremanship	.48	1.00	1.00	1.00	.54	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Graphic Arts	.90	1.00	.82	.66	.78	.84	1.00	.96	1.00	1.00	1.00	0
Heavy Equipment	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.78	1.00

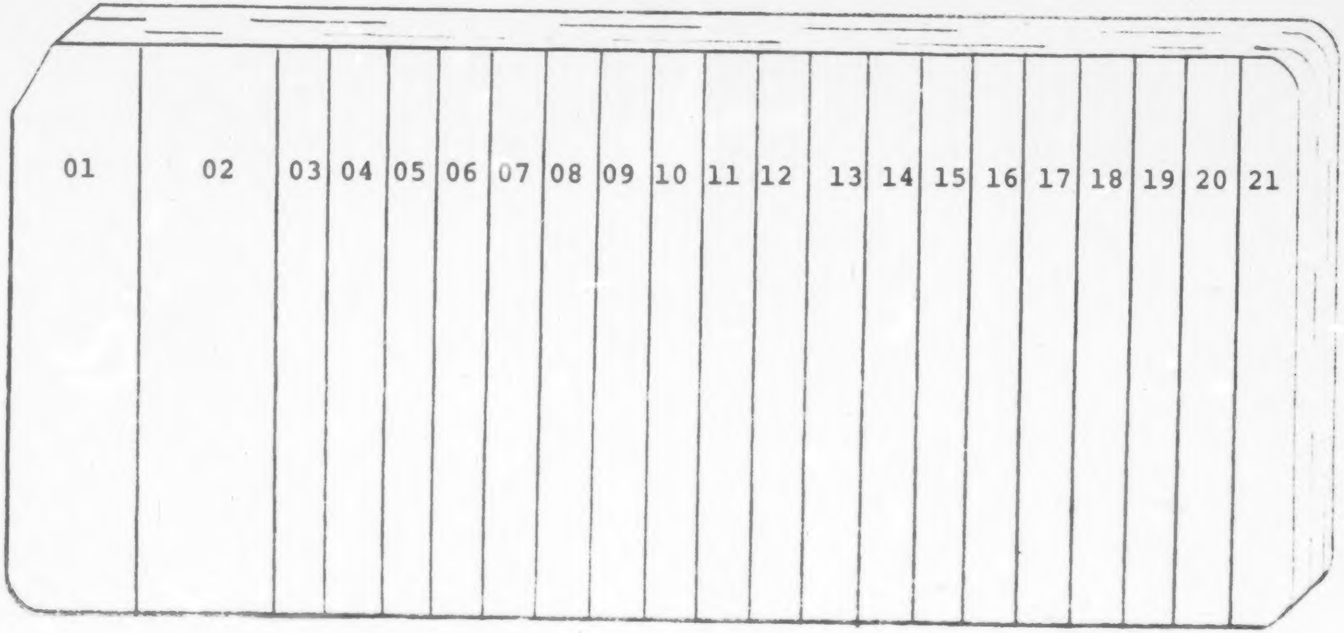
Table 14E (Cont.)

PROGRAMS	REGIONS											
	Statewide Totals	East Central	Southeast	Flint Hills	Southeast Central	Southwest Central	Near Southwest	Far Southwest	Far Northwest	Northwest Central	North Central	Northeast
Lineman	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Machine Shop	.82	1.00	.40	1.00	.78	0	.62	.70	1.00	1.00	.94	1.00
Masonry	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Painting	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Photography	1.00	.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Plumbing	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Police Science	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Radio & TV	.94	.52	0	1.00	1.00	1.00	.84	1.00	1.00	1.00	1.00	1.00
Sheet Metal	1.00	1.00	1.00	1.00	1.00	1.00	.98	1.00	1.00	1.00	1.00	1.00
Small Engines	.94	.80	1.00	0	.94	1.00	1.00	1.00	1.00	1.00	1.00	.86
Truck Driving	1.00	1.00	1.00	.50	1.00	1.00	0	1.00	1.00	1.00	1.00	1.00
Upholstering	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Welding	.92	1.00	1.00	1.00	.88	.58	.44	.80	1.00	1.00	.32	.58

		CRITERION VALUES																			
SCHOOL NAME	PROGRAM NAME	POLICY, ETC.	ADMINISTRATION	ADV. COMMITTEE	ORGANIZATION	INTENSITY	FACILITY	CERTIFICATION	YOUTH CLUB	ANCILLARY	LOCAL EVAL	REG. MANPOWER	STATE MANPOWER	PLACEMENT	COST PER STUDENT	COST PER GRADUATE	COST PER PLACEMENT	RETENTION	STUDENT INTEREST	COMPETITION	
4 8	12 16 20		24	28	32		36	40	44		48	52	56		60	64	68		72	76	80

CRITERION VALUES MUST BE THREE NUMERIC DIGITS. ALL DIGITS MUST BE FILLED IN. USE LEADING ZEROES IF NECESSARY. SCHOOL NAME AND PROGRAM NAME ARE ALPHABETIC CHARACTERS (INCLUDING SPACES). ABBREVIATE IF NECESSARY BUT USE THE SAME ABBREVIATION TO DESIGNATE TRAINING PROGRAMS OF THE SAME TYPE.

Figure 116: Coding Sheet.



01.	CC	1-10	School Name
02.	CC	11-20	Program Name
03.	CC	21-23	Philo, Goals & [illegible] Characteristics Criterion
04.	CC	24-26	Organ., Planning & Staffing Criterion
05.	CC	27-29	Reporting, Budgeting, & Evaluation Criterion
06.	CC	30-32	Description, Objectives & Purpose Criterion
07.	CC	33-35	Resources, Facilities & Equipment Criterion
08.	CC	36-38	Structure, Duration, Intensity & Conditions Criterion
09.	CC	39-41	Advisory Committee Criterion
10.	CC	42-44	Youth Club Criterion
11.	CC	45-47	Teacher Qualification, Methods & Program Evaluation Criterion
12.	CC	48-50	Clientele Served and Student Interest Criterion
13.	CC	51-53	Guidance and Counseling Criterion
14.	CC	54-56	State Manpower Needs Criterion
15.	CC	57-59	Regional Manpower Needs Criterion
16.	CC	60-62	Placement Rate Criterion
17.	CC	63-65	Cost per Student Criterion
18.	CC	66-68	Cost per Completion Criterion
19.	CC	69-71	Cost per Graduate Placed Criterion
20.	CC	72-74	Competition Criterion
21.	CC	75-77	Retention Criterion

(Note: All criterion values must be composed of three numeric digits. Leading zeroes should be used when necessary.)

Figure 117: Keypunch Format for Program Cards

CODING AND KEYPUNCHING WEIGHTS

Coding and keypunching of weights for the criteria are on the format presented in Figure 118. The weights file consists of one card with seventeen entries.

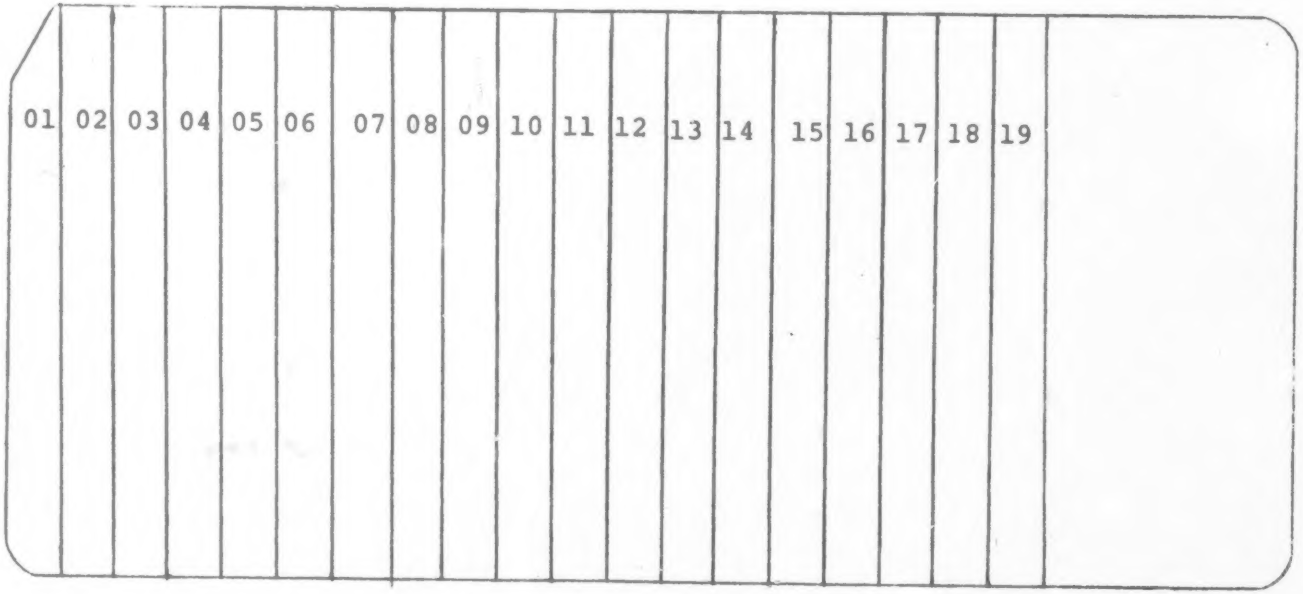
DESCRIPTION OF COMPUTER SOFTWARE

The computer software in this system consists of a single program called PRO-EVAL. The program is written in IBM OS AMERICAN NATIONAL STANDARD COBOL; needs a maximum of 120k on an IBM 50H; and processes 500 records in less than five minutes.

The program utilizes a predetermined weight scale and program criteria values to compute a program rating for each program, sorts program records on the basis of program rating and prints a listing of programs ranked by program rating, a listing of programs by program type and program rating, and a summary of each program's ratings on all criteria. The first two printouts list all criteria ratings relative to each program as well as the program rating itself. Figure 119 is a program flow chart; Figure 120 is a program listing and Figures 121,122 and 123 are sample output pages.

OPERATION INSTRUCTIONS

The first step in using the software is to insert the weight card (see Figure 124) into the software JCL. The second step is to insert the program cards for new programs (see Figure 124) into the software JCL. Upon completing these two steps, the software is ready to run. The procedure is repeated for established program cards. Figure 124 is a graphic description of how data cards are inserted into software JCL.



01. CC 01-02 Philo, Goals & Characteristics Weight
02. CC 03-04 Organization, Planning & Staffing Weight
03. CC 05-06 Reporting, Budgeting & Evaluation Weight
04. CC 07-08 Description, Objectives & Purpose Weight
05. CC 09-10 Resources, Facilities & Equipment Weight
06. CC 11-12 Structure, Duration, Intensity & Conditions Weight
07. CC 13-14 Advisory Committee Weight
08. CC 15-16 Youth Club Weight
09. CC 45-47 Teacher Qualifications, Method & Program Evaluation Weight
10. CC 19-20 Clientele Served & Student Interest Weight
11. CC 21-22 Guidance & Counseling Weight
12. CC 23-24 State Manpower Needs Weight
13. CC 25-26 Regional Manpower Needs Weight
14. CC 27-28 Placement Rate Weight
15. CC 29-30 Cost per Student Weight
16. CC 31-32 Cost per Completion Weight
17. CC 33-34 Cost per Graduate Placed Weight
18. CC 35-36 Competition Weight
19. CC 37-38 Retention Weight

(Note: All Weight values must be composed of two numeric digits. Leading zeroes should be used when necessary.)

Figure 118: Keypunch Format for Weight Cards

1. Open Weight File
2. Read Weight Card
3. Close Weight File
4. Add 1 to L
5. Move zero as to the Field (L) set to count number of programs of type L
6. Is L less than 200
7. Move zeroes to L
8. Perform PREPARE-HOLD-FILE SECTION
9. Sort program records in descending order on criterion (K) using INPUT-PROCEDURE-1 SECTION and OUTPUT-PROCEDURE-1 SECTION
10. Add 1 to K
11. Is K less than 19
12. Move zeroes to K
13. Sort program records in descending order on school, overall program rating using INPUT-PROCEDURE-2 SECTION and OUTPUT-PROCEDURE-2
14. Open Print File
15. Perform BY-PROGRAM-SUMMARY SECTION
16. Move 'GO' to the individual program control variable
17. Move spaces to the record control
18. Move 19 to I, move 1 to L
19. Sort program records in descending order on overall rating using INPUT-PROCEDURE-2 and OUTPUT-PROCEDURE-1
20. Perform OVERALL-SUMMARY SECTION
21. Close the print file
22. Stop the run

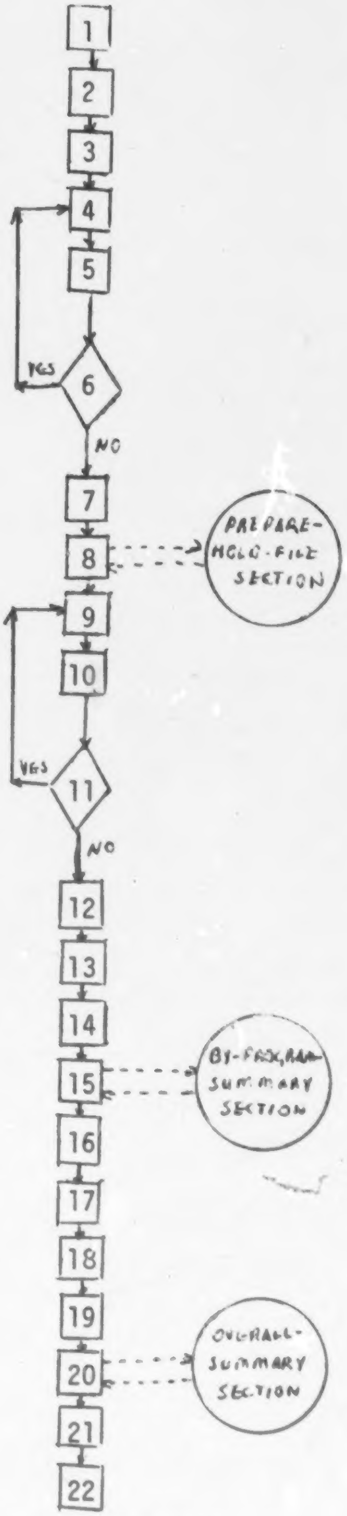


Figure 119: Program Application Evaluation System Software Flow Chart (MAINLINE SECTION)

1. Open the Program File for input and a Hold File for output
2. Read Program File record
3. Compute the program rating
4. If the program is at the secondary level
5. If the placement rate is less than .75 move an asterisk to the flag
6. If the placement rate is less than .50 move an asterisk to the flag
7. Move all data items to the hold record
8. Add 1 to I
9. Move zeroes to the criterion (I) rank field
10. I less than 40
11. Write hold record making program file level 2
12. Move spaces to the flag field
13. Close the Program File and the Program File level 2 (formerly Hold File)

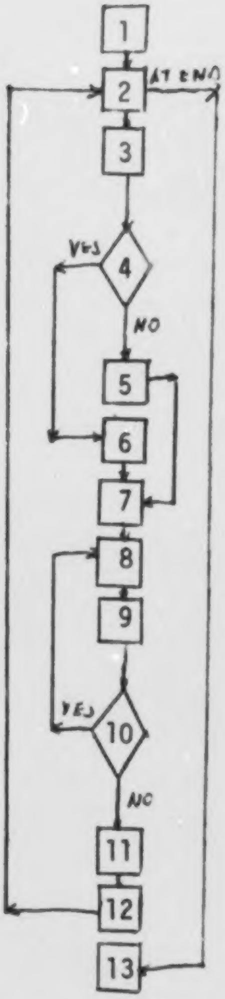


Figure 119: Program Application Evaluation System Software Flow Chart (Cont.) (PREPARE HOLD FILE SECTION)

1. Open the Program File level 2
2. Add 1 to I
3. Read Program File level 2 record
4. Move the criterion (I) from the record value to sort key 1 in the record
5. Release the record to sort file
6. Close Program File level 2

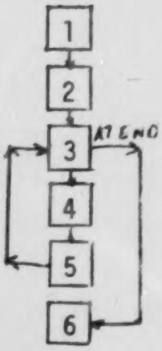


Figure 119: Program Application Evaluation System Software Flow Chart (Cont.) (INPUT-PROCEDURE-1 SECTION)

1. Add 1 to I
2. Open the Program File level 2 for input
3. Read Program File
4. Move the overall rating to sort key 1
5. Release sort file record
6. Is L greater than zero
7. Is program type in this record = to program type in previous record
8. Add 1 to the counter totaling number of programs of this type
9. Is first record control = spaces
10. Add 1 to counter totaling number of programs of this type: Move program type to record control
11. Move program type to record control
12. Move counter totaling number of programs of this type to Field (L) for number of programs of type L
13. Move 1 to counter totaling number of programs of this type
14. Add 1 to L
15. Move counter totaling number of programs of this type to Field (L) for number of programs of type L
16. Move zeroes to L
17. Close Program File level 2
18. Is individual summary control = 'GO'
19. Perform INDIVIDUAL-SUMMARY SECTION
20. Move spaces to individual summary control

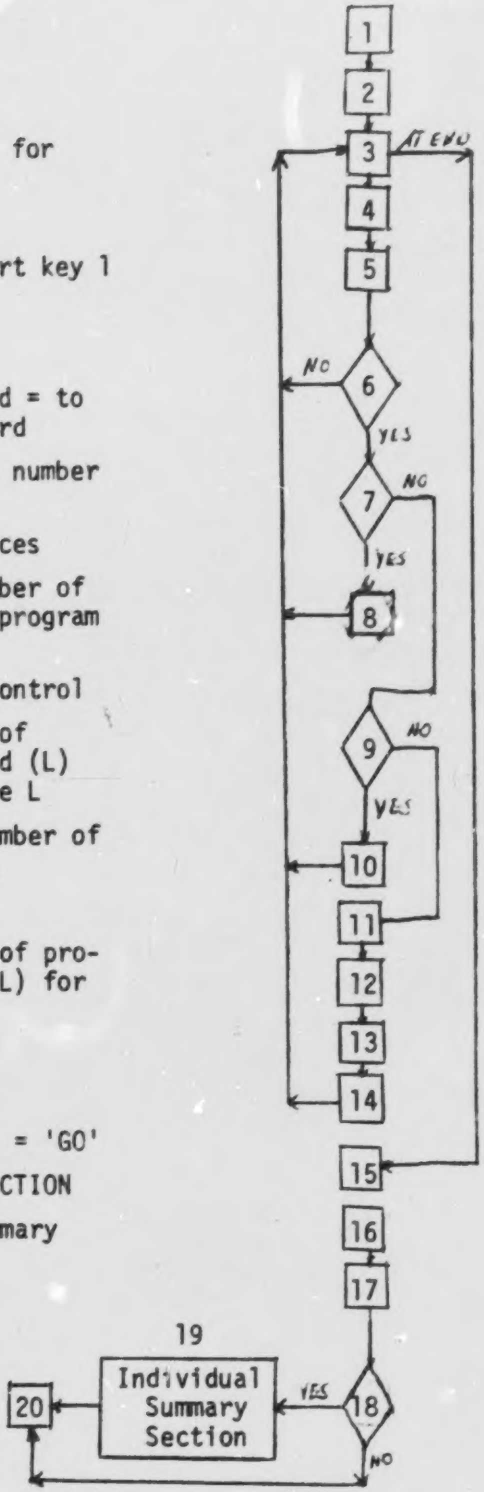


Figure 119: Program Application Evaluation System Software Flow Chart (Cont.) (INPUT-PROCEDURE-2 SECTION)

1. Open Program File level 2 for output
2. Move 2 to the rank counter
3. Return sort file record to status 1 area
4. Return sort file record to status 2 area
5. Is variable rating (I) in status 1 area = variable rating (I) is status 2 area
6. Move 1 to rank (I) in status 1 area and rank (I) in status 2 area: Move 'T' to Tie Score (I) in status 1 area and Tie Score (I) in status 2 area
7. Move 1 to rank (I) in status 1 area, move 2 to rank (I) in status 2 area, move spaces to Tie Score (I) in status 1 area and status 2 area
8. Return sort file record to status 2 area
9. Is variable rating (I) in status 1 area = variable rating (I) in status 2 area
10. Move rank (I) in status 1 area to rank (I) in status 2 area: Move 'T' to Tie Score in status 1 area and status 2 area
11. Move spaces to Tie Score in status 2 area: Move rank counter to rank (I) in status 2 area
12. Write Program File level 2 record from status 1 area
13. Move status 1 area to status 2 area
14. Add 1 to rank counter
15. Write Program File level 2 record from status 2 area
16. Close Program File level 2

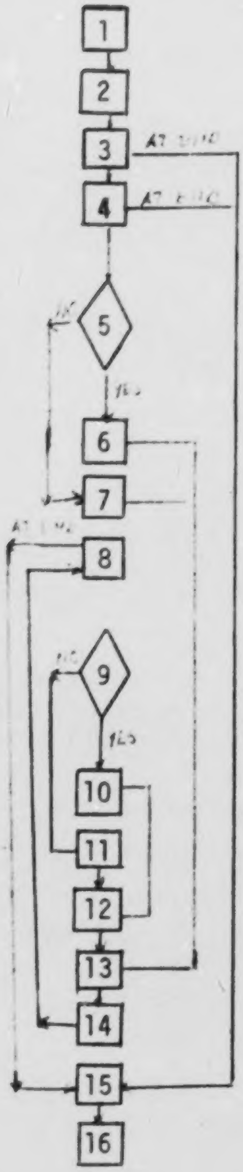


Figure 119: Program Application Evaluation System Software Flow Chart (Cont.) (OUTPUT-PROCEDURE-1 SECTION)

1. Move 1 to the rank counter
2. Open Program File level 2 for output
3. Add 1 to J
4. Return sort file record into status 1 area
5. Return sort file record into status 2 area
6. Is program type in status 1 area not = program type in status 2 area
7. Move 1 to rank (J) in status 1 area and status 2 area: Move spaces to Tie Score (J) in status 1 area and status 2 area
8. Is variable rating (J) in status 1 area = variable rating (J) in status 2 area
9. Move 1 to rank (J) in status 1 area and status 2 area: Move 'T' to Tie Scores (J) in status 1 area and status 2 area: Move 2 to rank counter
10. Move 1 to rank (J) in status 1 area: Move 2 to rank (J) in status 2 area: Move spaces to Tie Scores (J) in status 1 area and status 2 area
11. Add 1 to rank counter
12. Return sort file record to status 2 area
13. Is program type in status 1 area not = program type in status 2 area
14. Move 1 to rank counter: Move 1 to rank (J) in status 2 area: Move spaces to Tie Scores (J) in status 2 area
15. Is variable rating (J) in status 1 area = variable rating (J) in status 2 area
16. Move rank (J) in status 1 area to rank (J) in status 2 area: Move 'T' to Tie Scores (J) in status 1 area and status 2 area
17. Move rank counter to rank (J) in status 2 area: Move spaces to Tie Scores (J) in status 2 area
18. Add 1 to rank counter
19. Write Program File level 2 record from status 1 area
20. Move status 2 area to status 1 area
21. Write Program File level 2 record from status 2 area
22. Close Program File level 2

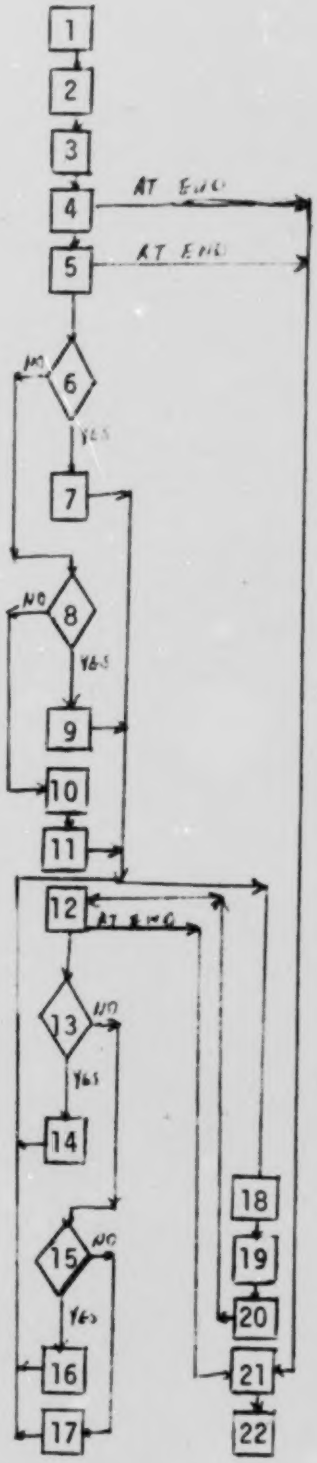


Figure 119: Program Application Evaluation System Software Flow Chart (Cont.) (OUTPUT-PROCEDURE-2 SECTION)

1. Open Program File level 2 for input
2. Move zero to L
3. Move spaces to program control
4. Read Program File level 1 record
5. Is program type = program control
6. Add 1 to L (L controls data moves for number of programs)
7. Move data to output lines
8. Print program page
9. Close Program File level 2

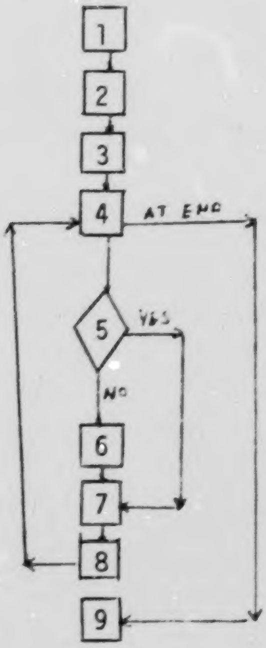


Figure 119: Program Application Evaluation System Software Flow Chart (Cont.) (INDIVIDUAL-SUMMARY SECTION)

1. Open Program File level 2 for input
2. Move zeroes to line counter
3. Write headers
4. Add 11 to line counter
5. Read Program File level 2 record
6. Move program type to program control
7. Read Program File level 2 record
8. Is program type = program control
9. Move zeroes to line counter and perform 3 and 4 above
10. Move data to standard line
11. Write standard line
12. Is line counter greater than 55
13. Move zeroes to line counter
14. Close Program File level 2

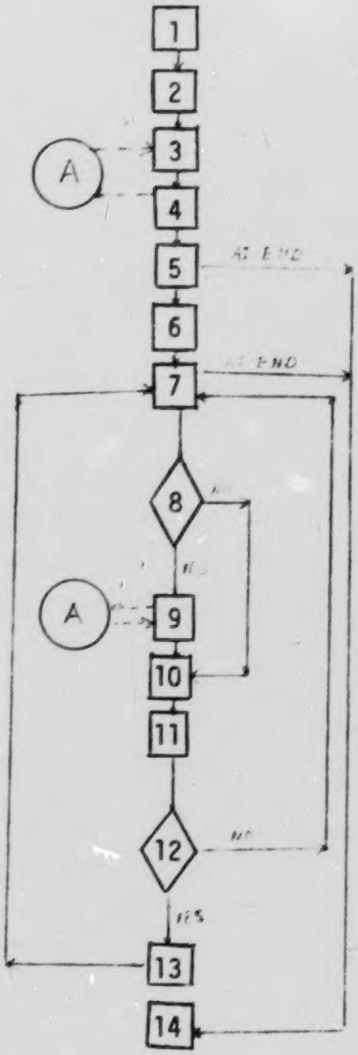


Figure 119: Program Application Evaluation System Software Flow Chart (Cont.) (By-PROGRAM-SUMMARY SECTION)

1. Open the Program File level for input
2. Move zero to the line counter
3. Write headers
4. Add 11 to line counter
5. Read the Program File level 2
6. Move data to standard output line for overall summary
7. Write print line
8. Add 2 to line count
9. Is line counter greater than 55
10. Move zeroes to line counter
11. Close Program File level 2

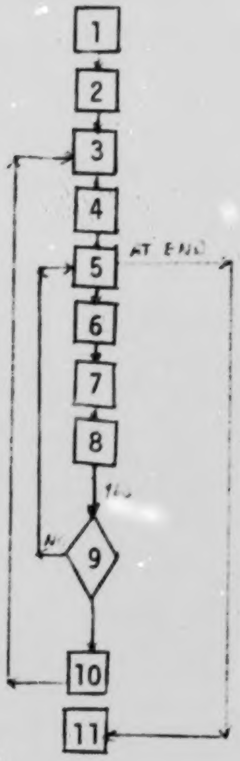


Figure 119: Program Application Evaluation System Software Flow Chart (Cont.) (OVERALL-SUMMARY SECTION)

```
IDENTIFICATION DIVISION.
PROGRAM-ID. PROGRAM-EVALUATION.
AUTHOR. DR. HARRIS AND DAVE JONES.
INSTALLATION. KANSAS STATE UNIVERSITY.
REMARKS.

    ***************************************************
    *                                                 *
    * THIS SOFTWARE WILL ANALYZE PROGRAM APPLICATIONS TO   *
    * DETERMINE PROGRAM APPLICATION RATINGS; LIST ALL *
    * PROGRAMS BY RANK ORDER OF RATINGS; LIST PROGRAMS  *
    * BY PROGRAM TYPE BY RANK OF RATINGS WITHIN TYPE; *
    * AND PRINT A SUMMARY OF THE RATING FOR EACH PROGRAM. *
    *                                                 *
    ***************************************************

ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER. IBM-360-H50.
OBJECT-COMPUTER. IBM-360-H50.
INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT PRINT-FILE ASSIGN TO UT-S-SYSPRINT.
    SELECT WEIGHT-FILE ASSIGN TO UT-S-SYSIN1.
    SELECT PROGRAM-FILE ASSIGN TO UT-S-SYSIN2.
    SELECT HOLD-FILE ASSIGN TO UT-S-SYSIN3.
    SELECT SORT-FILE ASSIGN TO UT-S-SORTWK01.
DATA DIVISION.
FILE SECTION.
SD  SORT-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 299 CHARACTERS
    DATA RECORD IS SORT-REC.
01  SORT-REC.
    02 FILLER                        PICTURE X(12).
    02 KEY-2                         PICTURE X(10).
    02 FILLER                        PICTURE X(271).
    02 KEY-1                         PICTURE X(6).
FD  PRINT-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 133 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS P-LINE.
01  P-LINE                           PICTURE X(133).
FD  PROGRAM-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS P-REC.
01  P-REC                            PICTURE X(80).
```

Figure 120: Program Application Evaluation System Software Listing

```
FD  HOLD-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 299 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS HOLD-RECORD.
01  HOLD-RECORD                 PICTURE X(299).
FD  WEIGHT-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS W-REC.
01  W-REC                       PICTURE X(80).
WORKING-STORAGE SECTION.
01  WEIGHTS.
    02 W1                       PICTURE 99.
    02 W2                       PICTURE 99.
    02 W3                       PICTURE 99.
    02 W4                       PICTURE 99.
    02 W5                       PICTURE 99.
    02 W6                       PICTURE 99.
    02 W7                       PICTURE 99.
    02 W8                       PICTURE 99.
    02 W9                       PICTURE 99.
    02 W10                      PICTURE 99.
    02 W11                      PICTURE 99.
    02 W12                      PICTURE 99.
    02 W13                      PICTURE 99.
    02 W14                      PICTURE 99.
    02 W15                      PICTURE 99.
    02 W16                      PICTURE 99.
    02 W17                      PICTURE 99.
    02 W18                      PICTURE 99.
    02 W19                      PICTURE 99.
    02 FILLER                   PICTURE X(42).
01  PROGRAM-INPUT.
    02 SCHOOL-NAME              PICTURE X(9).
    02 FILLER                   PICTURE X.
    02 PROGRAM-NAME             PICTURE X(10).
    02 POLICY-GOALS-PHILO       PICTURE 9V99.
    02 ADMINISTRATION           PICTURE 9V99.
    02 ADVISORY-COMMITTEE       PICTURE 9V99.
    02 INSTRUCTION              PICTURE 9V99.
    02 INTENSITY                PICTURE 9V99.
    02 FACILITIES               PICTURE 9V99.
    02 PERSONNEL                PICTURE 9V99.
    02 LEADERSHIP               PICTURE 9V99.
    02 ANCILLARY                PICTURE 9V99.
    02 LOCAL-EVALUATION         PICTURE 9V99.
    02 MANPOWER-NEEDS-REGION    PICTURE 9V99.
    02 MANPOWER-NEEDS-STATE     PICTURE 9V99.
    02 PLACEMENT-RATE           PICTURE 9V99.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
    02 COST-PER-STUDENT                PICTURE 9V99.
    02 COST-PER-GRADUATE               PICTURE 9V99.
    02 COST-PER-PLACEMENT              PICTURE 9V99.
    02 DROPOUT-RATE                    PICTURE 9V99.
    02 STUDENT-ASPIRATION              PICTURE 9V99.
    02 COMPETITION                     PICTURE 9V99.
    02 PRO-LEVEL                                  PICTURE X(3).
01  HEAD1.
    02 CC                              PICTURE X(49) VALUE SPACES.
    02 OTH                             PICTURE X(35) VALUE
       'KANSAS STATE DEPARTMENT OF EDUCATION'.
01  HEAD2.
    02 CC                              PICTURE X(51) VALUE SPACES.
    02 OTH                             PICTURE X(32) VALUE
       'DIVISION OF VOCATIONAL EDUCATION'.
01  HEAD3.
    02 CC                              PICTURE X(53) VALUE SPACES.
    02 OTH                             PICTURE X(28) VALUE
       'INDUSTRIAL EDUCATION SECTION'.
01  HEAD4.
    02 CC                              PICTURE X(52) VALUE SPACES.
    02 OTH                             PICTURE X(30) VALUE
       'PROGRAM APPLICATION EVALUATION'.
01  HEADA.
    02 CC                              PICTURE X(28) VALUE SPACES.
    02 OTH                             PICTURE X(36) VALUE
       'KANSAS STATE DEPARTMENT OF EDUCATION'.
01  HEADB.
    02 CC                              PICTURE X(30) VALUE SPACES.
    02 OTH                             PICTURE X(32) VALUE
       'DIVISION OF VOCATIONAL EDUCATION'.
01  HEADC.
    02 CC                              PICTURE X(32) VALUE SPACES.
    02 OTH                             PICTURE X(28) VALUE
       'INDUSTRIAL EDUCATION SECTION'.
01  HEADD.
    02 CC                              PICTURE X(31) VALUE SPACES.
    02 OTH                             PICTURE X(30) VALUE
       'PROGRAM APPLICATION EVALUATION'.
01  HEAD5.
    02 CC                              PICTURE X.
    02 OTH1                            PICTURE X(54) VALUE
       '******************************************************'.
    02 OTH2                            PICTURE X(54) VALUE
       '******************************************************'.
    02 OTH3                            PICTURE X(24) VALUE
       '************************'.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
01  HEAD06.
    02 CC                             PICTURE X.
    02 OTH1                           PICTURE X(54) VALUE
       'F  SCHOOL   PROGRAM   PGP  ADM  A-C  INS  INT  FAC  P'.
    02 OTH2                           PICTURE X(54) VALUE
       'ER  LDS  ANC  EVA  MNR  MNS  P-R  C-S  C-G  C-P  D-P  '.
    02 OTH3                           PICTURE X(24) VALUE
       'S-A  COM PRO-RA ORK  PRK'.
01  HEAD07.
    02 CC                             PICTURE X(16) VALUE SPACES.
    02 HDD                            PICTURE X(10) VALUE 'SCHOOL =  '.
    02 SCHOOL-OUT                     PICTURE X(11).
01  HEAD08.
    02 CC                             PICTURE X(16) VALUE SPACES.
    02 HDD                            PICTURE X(10) VALUE
       'PROGRAM = '.
    02 PROGRAM-OUT                    PICTURE X(10).
01  HEAD09.
    02 CC                             PICTURE X(24) VALUE SPACES.
    02 HDD                            PICTURE X(52) VALUE
       'CRITERIA             OVERALL RANK   RANK WITHIN PROGRAM'.
01  HEAD010.
    02 CC                             PICTURE X(16) VALUE SPACES.
    02 HDD                            PICTURE X(30) VALUE
       'NUMBER OF THIS TYPE PROGRAM = '.
    02 NUMBER-PROGRAMS                PICTURE 999 VALUE ZEROES.
01  HEAD11.
    02 CC                             PICTURE X(16) VALUE SPACES.
    02 HDD                            PICTURE X(30) VALUE
       'OVERALL NUMBER OF PROGRAMS = '.
    02 TOTAL-PROGRAMS                 PICTURE 999 VALUE ZEROES.
01  HEAD12.
    02 CC                             PICTURE X(30) VALUE
       '               ***************'.
    02 HDD                            PICTURE X(46) VALUE
       '**********************************************'.
01  HEAD13.
    02 CC                       PICTURE X(16) VALUE SPACES.
    02 HDD                      PICTURE X(54) VALUE
       'PROGRAM IS APPROVED/APPROVED PROVISIONALLY/DISAPPROVED'.
01  HEAD13A.
    02 CC                             PICTURE X(16) VALUE SPACES.
    02 HDD                            PICTURE X(54) VALUE
       'FUND: 2-MILL OPERATION/2-MILL PLANNING/STATE-FEDERAL'.
01  HEAD14.
    02 CC                       PICTURE X(16) VALUE SPACES.
    02 HDD                      PICTURE X(17) VALUE
       'STATE DIRECTORS :'.
```

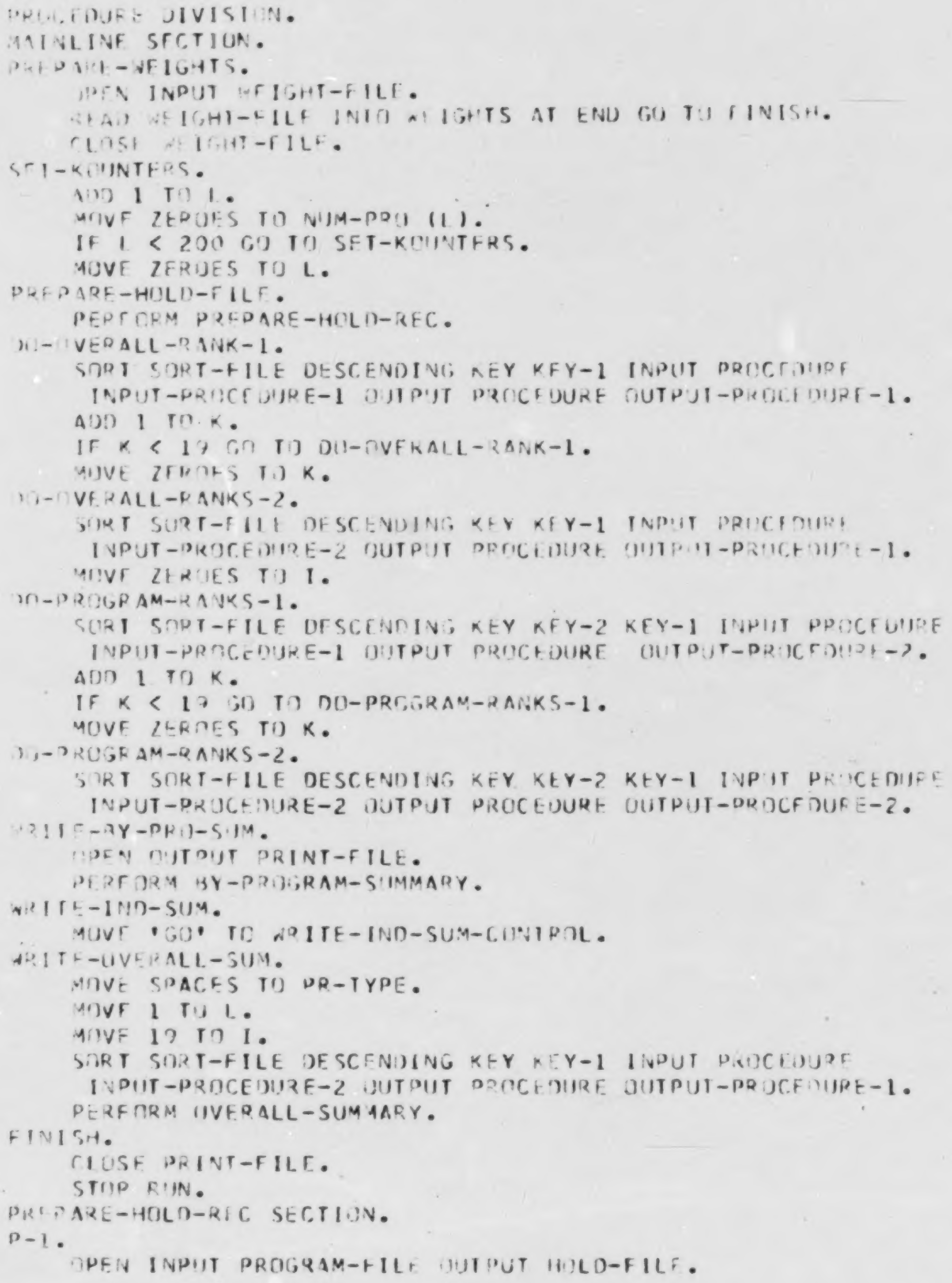
Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
01   HEAD15.
     02 CC                          PICTURE X(16) VALUE SPACES.
     02 HDD                         PICTURE X(5) VALUE 'DATE:'.
01   PRO-CNT-AREA.
     02 NUM-PRO-TYPE OCCURS 200 TIMES.
        03 NUM-PRO                     PICTURE 999.
01   OUTPUT-AREA.
     02 OUTPUT-LINE.
        03 CC                          PICTURE X.
        03 ASTRIX                   PICTURE X VALUE SPACES.
        03 SCH-NAME                    PICTURE X(9).
        03 FILLER                      PICTURE X VALUE SPACES.
        03 PRO-NAME                    PICTURE X(11).
        03 PGP                         PICTURE Z.99.
        03 AD                          PICTURE ZZ.99.
        03 A-C                         PICTURE ZZ.99.
        03 INS                         PICTURE ZZ.99.
        03 INT                         PICTURE ZZ.99.
        03 FAC                         PICTURE ZZ.99.
        03 PER                         PICTURE ZZ.99.
        03 LOS                         PICTURE ZZ.99.
        03 ANC                         PICTURE ZZ.99.
        03 L-E                         PICTURE ZZ.99.
        03 MNR                         PICTURE ZZ.99.
        03 MNS                         PICTURE ZZ.99.
        03 P-R                         PICTURE ZZ.99.
        03 C-S                         PICTURE ZZ.99.
        03 C-G                         PICTURE ZZ.99.
        03 C-P                         PICTURE ZZ.99.
        03 D-R                         PICTURE ZZ.99.
        03 S-A                         PICTURE ZZ.99.
        03 COM                         PICTURE ZZ.99.
        03 PROGRAM-RATING              PICTURE ZZZ.99.
        03 O-A-RANK.
           04 FILLER                   PICTURE X VALUE SPACES.
           04 ARA                      PICTURE 999 VALUE ZEROES.
           04 ARA-T                    PICTURE X VALUE SPACES.
        03 P-RANK.
           04 FILLER                   PICTURE X VALUE SPACES.
           04 ARA                      PICTURE 999 VALUE ZEROES.
           04 FILLER                   PICTURE X VALUE SPACES.
     02 RANKINGS.
        03 RANK-TABLES OCCURS 40 TIMES.
           04 RANK                     PICTURE 999.
           04 TIE-SCORES               PICTURE X.
     02 FILLER                         PICTURE X(5).
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
01   RANK-CHECK-AREA.
     02 STANDARD-LINE.
        03 FILLER                     PICTURE X(2).
        03 SCH-TYPE                   PICTURE X(10).
        03 PRO-TYPE                   PICTURE X(10).
        03 VARIABLE-TABLE OCCURS      19 TIMES.
           04 VAR                     PICTURE X(5).
        03 PRO-PAT                    PICTURE X(6).
        03 OVERALL-RANK.
           04 FILLER                  PICTURE X.
           04 OVAL-RANK               PICTURE 999.
           04 OVAL-RANK-T             PICTURE X.
        03 PROGRAM-RANK.
           04 FILLER                  PICTURE X.
           04 PRO-RANK                PICTURE 999.
           04 PRO-RANK-T              PICTURE X.
     02 RANK-TABLE OCCURS 40 TIMES.
        03 RNK                        PICTURE 999.
        03 RNK-T                      PICTURE X.
     02 SORT-KEY-CHECK                PICTURE X(6).
01   FINAL-OUTPUT-AREA.
     02 STANDARD-LINE-OUT.
        03 FILLER                     PICTURE X(12).
        03 PR-TYPE                    PICTURE X(10).
        03 FILLER                     PICTURE X(102).
        03 HD-1                       PICTURE 999.
        03 FILLER                     PICTURE X(2).
        03 HD-2                       PICTURE 999.
        03 FILLER                     PICTURE X.
     02 RNK-TBL OCCURS 40 TIMES.
        03 RK                         PICTURE 999.
        03 RK-T                       PICTURE X.
     02 SORT-KEY-HOLD                 PICTURE X(6).
01   VARIABLE-AREA.
     02 I                             PICTURE S999 VALUE ZERO.
     02 J                             PICTURE S999 VALUE 20.
     02 K                             PICTURE S999 VALUE ZERO.
     02 L                              PICTURE 999 VALUE ZEROES.
     02 COUT                           PICTURE 999 VALUE ZEROES.
     02 LINE-CT                       PICTURE 999 VALUE ZEROS.
     02 RANK-COUNT                    PICTURE 999 VALUE ZEROS.
     02 WRITE-IND-SUM-CONTROL         PICTURE X(2) VALUE SPACES.
01   OUTLINE.
     02 CC                            PICTURE X(16) VALUE SPACES.
     02 CRITERION-NAME                PICTURE X(30).
     02 O-RANK-OUT                    PICTURE ZZZ.
     02 O-RANK-OUT-TIE                PICTURE X.
     02 FILLER                        PICTURE X(13) VALUE SPACES.
     02 P-RANK-OUT                    PICTURE ZZZ.
     02 P-RANK-OUT-TIE                PICTURE X.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)



```
PROCEDURE DIVISION.
MAINLINE SECTION.
PREPARE-WEIGHTS.
     OPEN INPUT WEIGHT-FILE.
     READ WEIGHT-FILE INTO WEIGHTS AT END GO TO FINISH.
     CLOSE WEIGHT-FILE.
SET-KOUNTERS.
     ADD 1 TO L.
     MOVE ZEROES TO NUM-PRO (L).
     IF L < 200 GO TO SET-KOUNTERS.
     MOVE ZEROES TO L.
PREPARE-HOLD-FILE.
     PERFORM PREPARE-HOLD-REC.
DO-OVERALL-RANK-1.
     SORT SORT-FILE DESCENDING KEY KEY-1 INPUT PROCEDURE
      INPUT-PROCEDURE-1 OUTPUT PROCEDURE OUTPUT-PROCEDURE-1.
     ADD 1 TO K.
     IF K < 19 GO TO DO-OVERALL-RANK-1.
     MOVE ZEROES TO K.
DO-OVERALL-RANKS-2.
     SORT SORT-FILE DESCENDING KEY KEY-1 INPUT PROCEDURE
      INPUT-PROCEDURE-2 OUTPUT PROCEDURE OUTPUT-PROCEDURE-1.
     MOVE ZEROES TO I.
DO-PROGRAM-RANKS-1.
     SORT SORT-FILE DESCENDING KEY KEY-2 KEY-1 INPUT PROCEDURE
      INPUT-PROCEDURE-1 OUTPUT PROCEDURE  OUTPUT-PROCEDURE-2.
     ADD 1 TO K.
     IF K < 19 GO TO DO-PROGRAM-RANKS-1.
     MOVE ZEROES TO K.
DO-PROGRAM-RANKS-2.
     SORT SORT-FILE DESCENDING KEY KEY-2 KEY-1 INPUT PROCEDURE
      INPUT-PROCEDURE-2 OUTPUT PROCEDURE OUTPUT-PROCEDURE-2.
WRITE-BY-PRO-SUM.
     OPEN OUTPUT PRINT-FILE.
     PERFORM BY-PROGRAM-SUMMARY.
WRITE-IND-SUM.
     MOVE 'GO' TO WRITE-IND-SUM-CONTROL.
WRITE-OVERALL-SUM.
     MOVE SPACES TO PR-TYPE.
     MOVE 1 TO L.
     MOVE 19 TO I.
     SORT SORT-FILE DESCENDING KEY KEY-1 INPUT PROCEDURE
      INPUT-PROCEDURE-2 OUTPUT PROCEDURE OUTPUT-PROCEDURE-1.
     PERFORM OVERALL-SUMMARY.
FINISH.
     CLOSE PRINT-FILE.
     STOP RUN.
PREPARE-HOLD-REC SECTION.
P-1.
     OPEN INPUT PROGRAM-FILE OUTPUT HOLD-FILE.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

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```
P-2.
    READ PROGRAM-FILE INTO PROGRAM-INPUT AT END GO TO P-4.
    ADD 1 TO TOTAL-PROGRAMS.
    COMPUTE PROGRAM-RATING = W1 * POLICY-GOALS-PHILO + W2 *
     ADMINISTRATION + W3 * ADVISORY-COMMITTEE + W4 * INSTRUCTION
     + W5 * INTENSITY + W6 * FACILITIES + W7 * PERSONNEL + W8 *
     LEADERSHIP + W9 * ANCILLARY + W10 * LOCAL-EVALUATION + W11
     * MANPOWER-NEEDS-REGION + W12 * MANPOWER-NEEDS-STATE + W13
     * PLACEMENT-RATE + W14 * COST-PER-STUDENT + W15 *
     COST-PER-GRADUATE + W16 * COST-PER-PLACEMENT + W17 *
     DROPOUT-RATE + W18 * STUDENT-ASPIRATION + W19 *
     COMPETITION.
    IF PRO-LEVEL = 'ONE' GO TO P-2-B.
    IF PLACEMENT-RATE < .75 MOVE '*' TO ASTRIX.
    GO TO P-2-C.
P-2-B.
    IF PLACEMENT-RATE < .50 MOVE '*' TO ASTRIX.
P-2-C.
    MOVE SCHOOL-NAME TO SCH-NAME.
    MOVE PROGRAM-NAME TO PRO-NAME.
    MOVE POLICY-GOALS-PHILO TO PGP.
    MOVE ADMINISTRATION TO AD.
    MOVE ADVISORY-COMMITTEE TO A-C.
    MOVE INSTRUCTION TO INS.
    MOVE INTENSITY TO INT.
    MOVE FACILITIES TO FAC.
    MOVE PERSONNEL TO PER.
    MOVE LEADERSHIP TO LDS.
    MOVE ANCILLARY TO ANC.
    MOVE LOCAL-EVALUATION TO L-E.
    MOVE MANPOWER-NEEDS-REGION TO MNR.
    MOVE MANPOWER-NEEDS-STATE TO MNS.
    MOVE PLACEMENT-RATE TO P-R.
    MOVE COST-PER-STUDENT TO C-S.
    MOVE COST-PER-GRADUATE TO C-G.
    MOVE COST-PER-PLACEMENT TO C-P.
    MOVE DROPOUT-RATE TO D-R.
    MOVE STUDENT-ASPIRATION TO S-A.
    MOVE COMPETITION TO COM.
P-3.
    ADD 1 TO I.
    MOVE ZEROES TO RANK (I).
    IF I < 40 GO TO P-3.
    MOVE ZEROES TO I.
    WRITE HOLD-RECORD FROM OUTPUT-AREA.
    MOVE SPACES TO ASTRIX.
    GO TO P-2.
P-4.
    CLOSE PROGRAM-FILE HOLD-FILE.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
INPUT-PROCEDURE-1 SECTION.
PA-1.
    OPEN INPUT HOLD-FILE.
    ADD 1 TO I.
PA-2.
    READ HOLD-FILE INTO RANK-CHECK-AREA AT END GO TO PA-3.
    MOVE VAR (I) TO SORT-KEY-CHECK.
    RELEASE SORT-REC FROM RANK-CHECK-AREA.
    GO TO PA-2.
PA-3.
    CLOSE HOLD-FILE.
OUTPUT-PROCEDURE-1 SECTION.
PAR-1.
    OPEN OUTPUT HOLD-FILE.
    MOVE 2 TO RANK-COUNT.
    RETURN SORT-FILE INTO FINAL-OUTPUT-AREA AT END GO TO PAR-4.
    RETURN SORT-FILE INTO RANK-CHECK-AREA AT END GO TO PAR-4.
    IF SORT-KEY-CHECK = SORT-KEY-HOLD MOVE 1 TO RNK (I), RK (I)
     MOVE 'T' TO RNK-T (I), RK-T (I) OTHERWISE MOVE 2 TO
     RNK (I), MOVE 1 TO RK (I) MOVE SPACES TO RNK-T (I), MOVE
     SPACES TO RK-T (I).
    GO TO PAR-3.
PAR-2.
    RETURN SORT-FILE INTO RANK-CHECK-AREA AT END GO TO PAR-4.
    IF SORT-KEY-CHECK = SORT-KEY-HOLD MOVE RK (I) TO RNK (I)
     MOVE 'T' TO RNK-T (I), RK-T (I) OTHERWISE MOVE SPACES TO
     RNK-T (I) MOVE RANK-COUNT TO RNK (I).
PAR-3.
    WRITE HOLD-RECORD FROM FINAL-OUTPUT-AREA.
    MOVE RANK-CHECK-AREA TO FINAL-OUTPUT-AREA.
    ADD 1 TO RANK-COUNT.
    GO TO PAR-2.
PAR-4.
    WRITE HOLD-RECORD FROM RANK-CHECK-AREA.
    CLOSE HOLD-FILE.
OUTPUT-PROCEDURE-2 SECTION.
PARA-1.
    MOVE 1 TO RANK-COUNT.
    OPEN OUTPUT HOLD-FILE.
    ADD 1 TO J.
    RETURN SORT-FILE INTO FINAL-OUTPUT-AREA AT END GO TO PARA-4.
    RETURN SORT-FILE INTO RANK-CHECK-AREA AT END GO TO PARA-4.
    IF PRO-TYPE NOT = PR-TYPE MOVE 1 TO RNK (J), RK (J) MOVE
     SPACES TO RNK-T (J), RK-T (J) GO TO PARA-3.
    IF SORT-KEY-CHECK = SORT-KEY-HOLD MOVE 1 TO RNK (J), RK (J)
     MOVE 'T' TO RNK-T (J), RK-T (J) MOVE 2 TO RANK-COUNT
     OTHERWISE MOVE 2 TO RNK (J) MOVE 1 TO RK (J) MOVE SPACES
     TO RNK-T (J), RK-T (J).
    ADD 1 TO RANK-COUNT.
    GO TO PARA-3.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
PARA-2.
    RETURN SORT-FILE INTO RANK-CHECK-AREA AT END GO TO PARA-4.
    IF PRO-TYPE NOT = PR-TYPE MOVE 1 TO RANK-COUNT MOVE 1 TO
     RNK (J) MOVE SPACES TO RNK-T (J) GO TO PARA-3.
    IF SORT-KEY-CHECK = SORT-KEY-HOLD MOVE RK (J) TO RNK (J)
     MOVE 'T' TO RNK-T (J), RK-T (J) OTHERWISE MOVE RANK-COUNT
     TO RNK (J) MOVE SPACES TO RNK-T (J).
PARA-3.
    ADD 1 TO RANK-COUNT.
    WRITE HOLD-RECORD FROM FINAL-OUTPUT-AREA.
    MOVE RANK-CHECK-AREA TO FINAL-OUTPUT-AREA.
    GO TO PARA-2.
PARA-4.
    WRITE HOLD-RECORD FROM RANK-CHECK-AREA.
    CLOSE HOLD-FILE.
INPUT-PROCEDURE-2 SECTION.
PARAG-1.
    ADD 1 TO I.
    OPEN INPUT HOLD-FILE.
PARAG-2.
    READ HOLD-FILE INTO RANK-CHECK-AREA AT END GO TO PARAG-3.
    MOVE PRO-RAT TO SORT-KEY-CHECK.
    RELEASE SORT-REC FROM RANK-CHECK-AREA.
    IF L NOT > 0 GO TO PARAG-2.
    IF PRO-TYPE = PR-TYPE ADD 1 TO COUT GO TO PARAG-2.
    IF PR-TYPE = SPACES ADD 1 TO COUT MOVE PRO-TYPE TO PR-TYPE
     GO TO PARAG-2.
    MOVE PRO-TYPE TO PR-TYPE.
    MOVE COUT TO NUM-PRO (L).
    MOVE 1 TO COUT.
    ADD 1 TO L.
    GO TO PARAG-2.
PARAG-3.
    MOVE COUT TO NUM-PRO (L).
    MOVE ZEROES TO L.
    CLOSE HOLD-FILE.
    IF WRITE-IND-SUM-CONTROL = 'GO' PERFORM INDIVIDUAL-SUMMARY
     MOVE SPACES TO WRITE-IND-SUM-CONTROL.
OVERALL-SUMMARY SECTION.
PARAGR-1.
    OPEN INPUT HOLD-FILE.
    MOVE ZERO TO LINE-CT.
PARAGR-2.
    WRITE P-LINE FROM HEAD1 AFTER POSITIONING 0 LINES.
    WRITE P-LINE FROM HEAD2 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD3 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD4 AFTER POSITIONING 2 LINES.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM HEAD6 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 1 LINES.
    ADD 11 TO LINE-CT.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
PARAGR-3.
    READ HOLD-FILE INTO RANK-CHECK-AREA AT END GO TO PARAGR-4.
    MOVE RNK (20) TO OVAL-RANK.
    MOVE RNK-T (20) TO OVAL-RANK-T.
    MOVE RNK (40) TO PRO-RANK.
    MOVE RNK-T (40) TO PRO-RANK-T.
    WRITE P-LINE FROM STANDARD-LINE AFTER POSITIONING 2 LINES.
    ADD 2 TO LINE-CT.
    IF LINE-CT > 55 MOVE ZEROES TO LINE-CT GO TO PARAGR-2.
    GO TO PARAGR-3.
PARAGR-4.
    CLOSE HOLD-FILE.
BY-PROGRAM-SUMMARY SECTION.
PARAGRA-1.
    OPEN INPUT HOLD-FILE.
    MOVE ZEROES TO LINE-CT.
PARAGRA-2.
    WRITE P-LINE FROM HEAD1 AFTER POSITIONING 0 LINES.
    WRITE P-LINE FROM HEAD2 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD3 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD4 AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM HEAD6 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 1 LINES.
    ADD 11 TO LINE-CT.
PARAGRA-3.
    READ HOLD-FILE INTO RANK-CHECK-AREA AT END GO TO PARAGRA-6.
    MOVE PRO-TYPE TO PR-TYPE.
    GO TO PARAGRA-5.
PARAGRA-4.
    READ HOLD-FILE INTO RANK-CHECK-AREA AT END GO TO PARAGRA-6.
PARAGRA-5.
    IF PRO-TYPE NOT = PR-TYPE MOVE ZEROES TO LINE-CT PERFORM
     PARAGRA-2.
    MOVE PRO-TYPE TO PR-TYPE.
    MOVE RNK (20) TO OVAL-RANK.
    MOVE RNK-T (20) TO OVAL-RANK-T.
    MOVE RNK (40) TO PRO-RANK.
    MOVE RNK-T (40) TO PRO-RANK-T.
    WRITE P-LINE FROM STANDARD-LINE AFTER POSITIONING 2 LINES.
    ADD 2 TO LINE-CT.
    IF LINE-CT > 55 MOVE ZERO TO LINE-CT PERFORM PARAGRA-2.
    GO TO PARAGRA-4.
PARAGRA-6.
    CLOSE HOLD-FILE.
INDIVIDUAL-SUMMARY SECTION.
PARAGRAPH-1.
    OPEN INPUT HOLD-FILE.
    MOVE 0 TO L.
    MOVE SPACES TO PR-TYPE.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
PARAGRAPH-2.
    READ HOLD-FILE INTO RANK-CHECK-AREA AT END GO TO PARAGRAPH-3.
    IF PRO-TYPE NOT = PR-TYPE ADD 1 TO L.
    MOVE PRO-TYPE TO PR-TYPE.
    MOVE NUM-PRO (L) TO NUMBER-PROGRAMS.
    WRITE P-LINE FROM HEADA AFTER POSITIONING 0 LINES.
    WRITE P-LINE FROM HEADB AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEADC AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEADD AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD12 AFTER POSITIONING 3 LINES.
    MOVE SCH-TYPE TO SCHOOL-OUT.
    MOVE PRO-TYPE TO PROGRAM-OUT.
    WRITE P-LINE FROM HEAD7 AFTER POSITIONING 2 LINES.
    WRITE P-LINE FROM HEAD8 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD12 AFTER POSITIONING 2 LINES.
    WRITE P-LINE FROM HEAD9 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD12 AFTER POSITIONING 1 LINES.
    MOVE  'TOTAL-RATING                 ' TO CRITERION-NAME.
    MOVE RNK (20) TO O-RANK-OUT.
    MOVE RNK-T (20) TO O-RANK-OUT-TIE.
    MOVE RNK (40) TO P-RANK-OUT.
    MOVE RNK-T (40) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 2 LINES.
    MOVE 'POLICY-GOALS-PHILOSOPHY' TO CRITERION-NAME.
    MOVE RNK (1) TO O-RANK-OUT.
    MOVE RNK-T (1) TO O-RANK-OUT-TIE.
    MOVE RNK (21) TO P-RANK-OUT.
    MOVE RNK-T (21) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 2 LINES.
    MOVE  'ADMINISTRATION               ' TO CRITERION-NAME.
    MOVE RNK (2) TO O-RANK-OUT.
    MOVE RNK-T (2) TO O-RANK-OUT-TIE.
    MOVE RNK (22) TO P-RANK-OUT.
    MOVE RNK-T (22) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'ADVISORY-COMMITTEE           ' TO CRITERION-NAME.
    MOVE RNK (3) TO O-RANK-OUT.
    MOVE RNK-T (3) TO O-RANK-OUT-TIE.
    MOVE RNK (23) TO P-RANK-OUT.
    MOVE RNK-T (23) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'INSTRUCTION                  ' TO CRITERION-NAME.
    MOVE RNK (4) TO O-RANK-OUT.
    MOVE RNK-T (4) TO O-RANK-OUT-TIE.
    MOVE RNK (24) TO P-RANK-OUT.
    MOVE RNK-T (24) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'INTENSITY                    ' TO CRITERION-NAME.
    MOVE RNK (5) TO O-RANK-OUT.
    MOVE RNK-T (5) TO O-RANK-OUT-TIE.
```

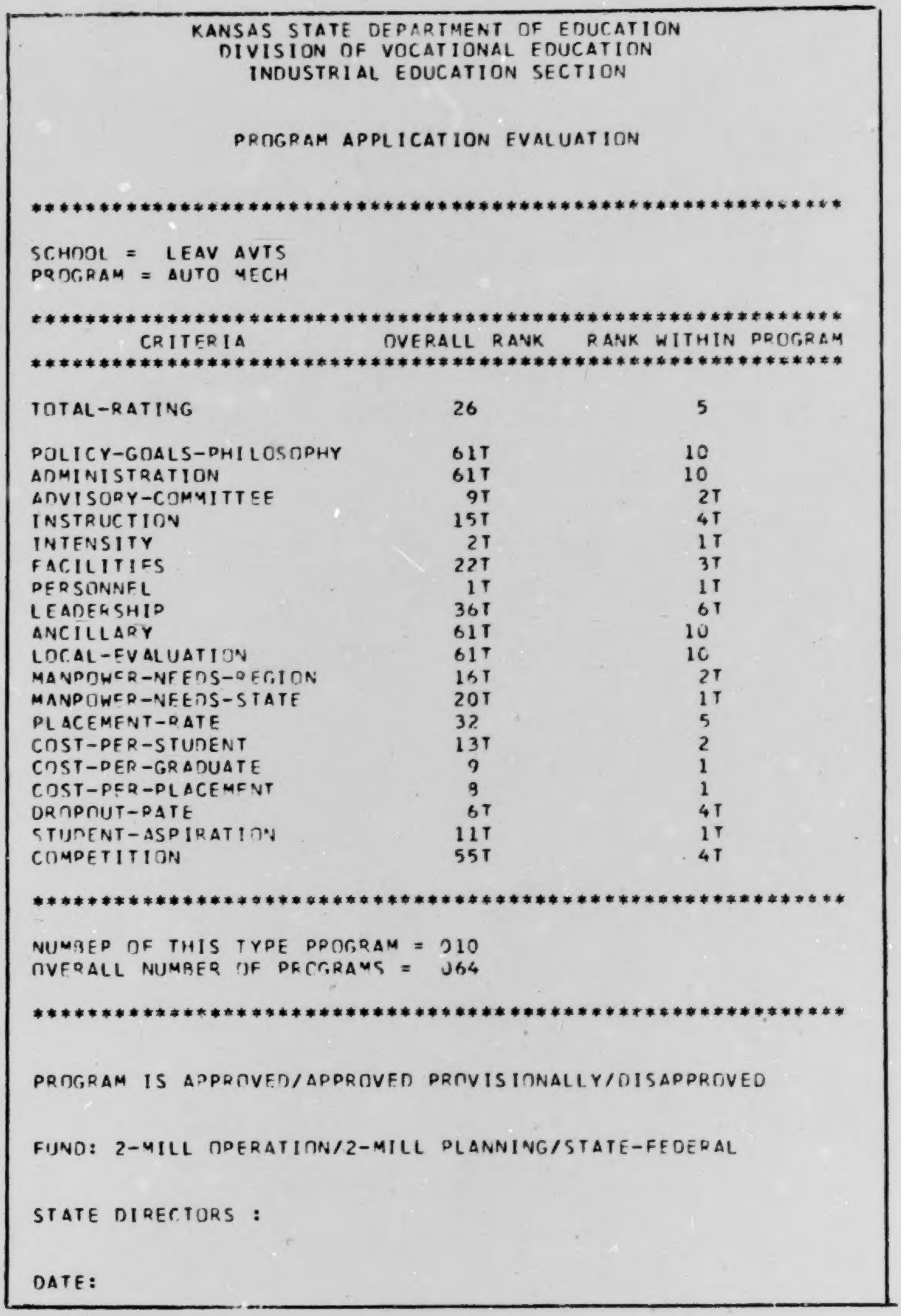
Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
MOVE RNK (25) TO P-RANK-OUT.
MOVE RNK-T (25) TO P-RANK-OUT-TIE.
WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
MOVE 'FACILITIES            ' TO CRITERION-NAME.
MOVE RNK (6) TO O-RANK-OUT.
MOVE RNK-T (6) TO O-RANK-OUT-TIE.
MOVE RNK (26) TO P-RANK-OUT.
MOVE RNK-T (26) TO P-RANK-OUT-TIE.
WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
MOVE 'PERSONNEL             ' TO CRITERION-NAME.
MOVE RNK (7) TO O-RANK-OUT.
MOVE RNK-T (7) TO O-RANK-OUT-TIE.
MOVE RNK (27) TO P-RANK-OUT.
MOVE RNK-T (27) TO P-RANK-OUT-TIE.
WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
MOVE 'LEADERSHIP            ' TO CRITERION-NAME.
MOVE RNK (8) TO O-RANK-OUT.
MOVE RNK-T (8) TO O-RANK-OUT-TIE.
MOVE RNK (28) TO P-RANK-OUT.
MOVE RNK-T (28) TO P-RANK-OUT-TIE.
WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
MOVE 'ANCILLARY             ' TO CRITERION-NAME.
MOVE RNK (9) TO O-RANK-OUT.
MOVE RNK-T (9) TO O-RANK-OUT-TIE.
MOVE RNK (29) TO P-RANK-OUT.
MOVE RNK-T (29) TO P-RANK-OUT-TIE.
WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
MOVE 'LOCAL-EVALUATION      ' TO CRITERION-NAME.
MOVE RNK (10) TO O-RANK-OUT.
MOVE RNK-T (10) TO O-RANK-OUT-TIE.
MOVE RNK (30) TO P-RANK-OUT.
MOVE RNK-T (30) TO P-RANK-OUT-TIE.
WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
MOVE 'MANPOWER-NEEDS-REGION ' TO CRITERION-NAME.
MOVE RNK (11) TO O-RANK-OUT.
MOVE RNK-T (11) TO O-RANK-OUT-TIE.
MOVE RNK (31) TO P-RANK-OUT.
MOVE RNK-T (31) TO P-RANK-OUT-TIE.
WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
MOVE 'MANPOWER-NEEDS-STATE  ' TO CRITERION-NAME.
MOVE RNK (12) TO O-RANK-OUT.
MOVE RNK-T (12) TO O-RANK-OUT-TIE.
MOVE RNK (32) TO P-RANK-OUT.
MOVE RNK-T (32) TO P-RANK-OUT-TIE.
WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
MOVE 'PLACEMENT-RATE        ' TO CRITERION-NAME.
MOVE RNK (13) TO O-RANK-OUT.
MOVE RNK-T (13) TO O-RANK-OUT-TIE.
MOVE RNK (33) TO P-RANK-OUT.
MOVE RNK-T (33) TO P-RANK-OUT-TIE.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)

```
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'COST-PER-STUDENT         ' TO CRITERION-NAME.
    MOVE RNK (14) TO O-RANK-OUT.
    MOVE RNK-T (14) TO O-RANK-OUT-TIE.
    MOVE RNK (34) TO P-RANK-OUT.
    MOVE RNK-T (34) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'COST-PER-GRADUATE        ' TO CRITERION-NAME.
    MOVE RNK (15) TO O-RANK-OUT.
    MOVE RNK-T (15) TO O-RANK-OUT-TIE.
    MOVE RNK (35) TO P-RANK-OUT.
    MOVE RNK-T (35) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'COST-PER-PLACEMENT       ' TO CRITERION-NAME.
    MOVE RNK (16) TO O-RANK-OUT.
    MOVE RNK-T (16) TO O-RANK-OUT-TIE.
    MOVE RNK (36) TO P-RANK-OUT.
    MOVE RNK-T (36) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'DROPOUT-RATE             ' TO CRITERION-NAME.
    MOVE RNK (17) TO O-RANK-OUT.
    MOVE RNK-T (17) TO O-RANK-OUT-TIE.
    MOVE RNK (37) TO P-RANK-OUT.
    MOVE RNK-T (37) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'STUDENT-ASPIRATION       ' TO CRITERION-NAME.
    MOVE RNK (18) TO O-RANK-OUT.
    MOVE RNK-T (18) TO O-RANK-OUT-TIE.
    MOVE RNK (38) TO P-RANK-OUT.
    MOVE RNK-T (38) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    MOVE  'COMPETITION              ' TO CRITERION-NAME.
    MOVE RNK (19) TO O-RANK-OUT.
    MOVE RNK-T (19) TO O-RANK-OUT-TIE.
    MOVE RNK (39) TO P-RANK-OUT.
    MOVE RNK-T (39) TO P-RANK-OUT-TIE.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD12 AFTER POSITIONING 2 LINES.
    WRITE P-LINE FROM HEAD10 AFTER POSITIONING 2 LINES.
    WRITE P-LINE FROM HEAD11 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD12 AFTER POSITIONING 2 LINES.
    WRITE P-LINE FROM HEAD13 AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM HEAD13A AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM HEAD14 AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM HEAD15 AFTER POSITIONING 3 LINES.
    GO TO PARAGRAPH-2.
PARAGRAPH-3.
    CLOSE HOLD-FILE.
```

Figure 120: Program Application Evaluation System Software Listing (Cont.)



```
              KANSAS STATE DEPARTMENT OF EDUCATION
               DIVISION OF VOCATIONAL EDUCATION
                INDUSTRIAL EDUCATION SECTION


                PROGRAM APPLICATION EVALUATION


***************************************************************


SCHOOL =  LEAV AVTS
PROGRAM = AUTO MECH

***************************************************************
        CRITERIA            OVERALL RANK   RANK WITHIN PROGRAM
***************************************************************

TOTAL-RATING                      26               5

POLICY-GOALS-PHILOSOPHY           61T             10
ADMINISTRATION                    61T             10
ADVISORY-COMMITTEE                 9T              2T
INSTRUCTION                       15T              4T
INTENSITY                          2T              1T
FACILITIES                        22T              3T
PERSONNEL                          1T              1T
LEADERSHIP                        36T              6T
ANCILLARY                         61T             10
LOCAL-EVALUATION                  61T             10
MANPOWER-NEEDS-REGION             16T              2T
MANPOWER-NEEDS-STATE              20T              1T
PLACEMENT-RATE                    32               5
COST-PER-STUDENT                  13T              2
COST-PER-GRADUATE                  9               1
COST-PER-PLACEMENT                 8               1
DROPOUT-RATE                       6T              4T
STUDENT-ASPIRATION                11T              1T
COMPETITION                       55T              4T

***************************************************************

NUMBER OF THIS TYPE PROGRAM = 010
OVERALL NUMBER OF PROGRAMS =  064

***************************************************************


PROGRAM IS APPROVED/APPROVED PROVISIONALLY/DISAPPROVED


FUND: 2-MILL OPERATION/2-MILL PLANNING/STATE-FEDERAL


STATE DIRECTORS :


DATE:
```

Figure 121: Sample Output (Individual Program)

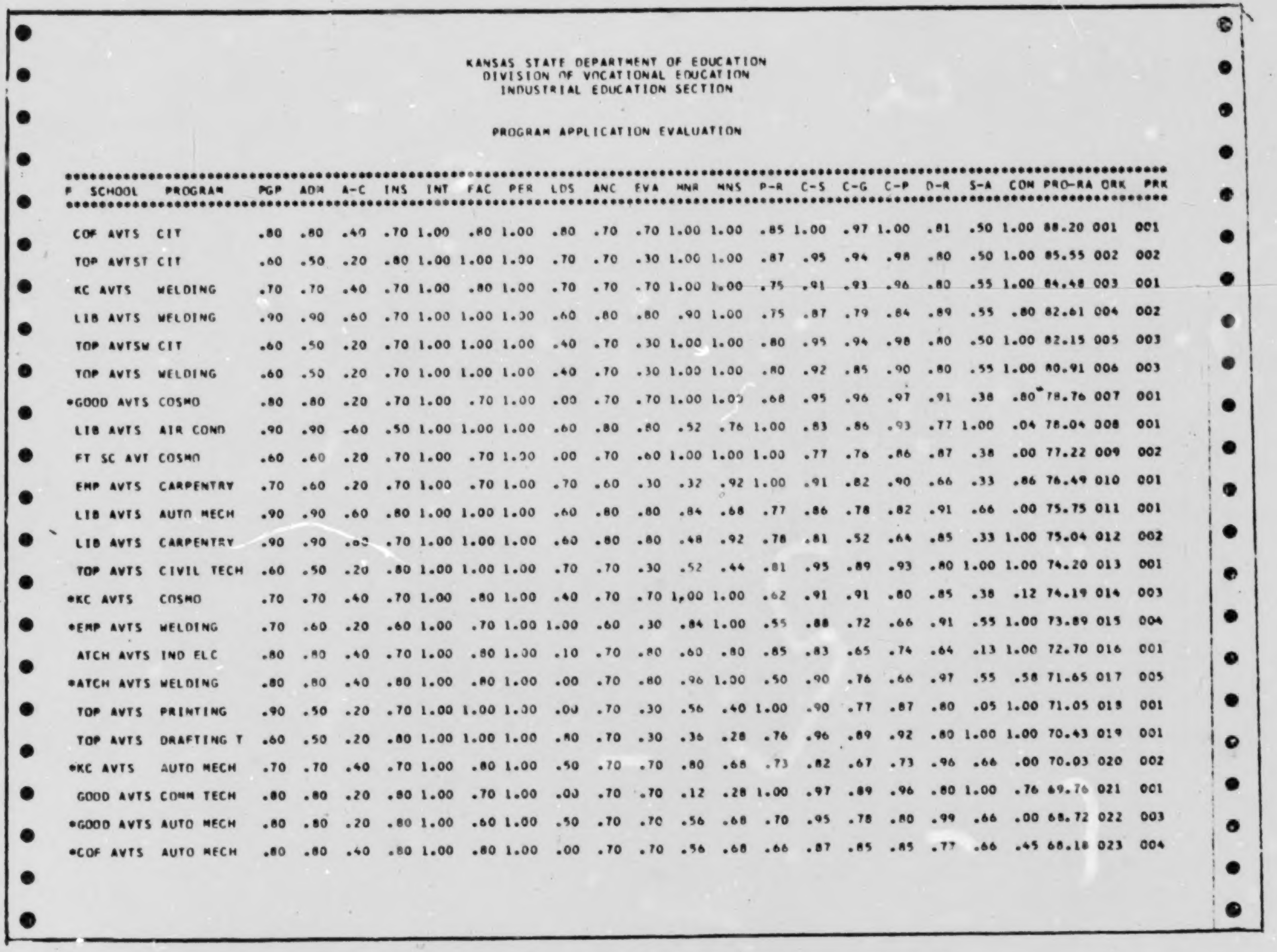
```
                                      KANSAS STATE DEPARYMENT OF EDUCATION
                                       DIVISION OF VOCATIONAL EDUCATION
                                        INDUSTRIAL EDUCATION SECTION

                                        PROGRAM APPLICATION EVALUATION

********************************************************************************************************************
F  SCHOOL    PROGRAM    PGP  ADM  A-C  INS  INT  FAC  PER  LDS  ANC  EVA  MNR  MNS  P-R  C-S  C-G  C-P  O-H  S-A  COM PRO-RA ORK  PRK
********************************************************************************************************************

 LIB AVTS  AUTO MECH   .90  .90  .60  .80 1.00 1.00 1.00  .60  .80  .90  .84  .68  .77  .86  .79  .82  .91  .66  .00 75.75 011  001
*KC AVTS   AUTO MECH   .70  .70  .40  .70 1.00  .80 1.00  .50  .70  .70  .80  .68  .73  .82  .67  .73  .96  .66  .00 70.03 020  002
*GOOD AVTS AUTO MECH   .80  .80  .20  .80 1.00  .60 1.00  .50  .70  .70  .56  .68  .70  .95  .79  .80  .99  .66  .00 68.72 022  003
*COF AVTS  AUTO MECH   .80  .80  .40  .80 1.00  .80 1.00  .00  .70  .70  .56  .68  .66  .87  .85  .85  .77  .66  .45 68.18 023  004
 LEAV AVTS AUTO MECH   .40  .40  .40  .70 1.00  .80 1.00  .00  .20  .10  .80  .68  .72  .94  .92  .94  .91  .66  .00 67.29 026  005
 TOP AVTS  AUTO MECH   .60  .50  .20  .60 1.00 1.00 1.00  .00  .70  .30  .80  .68  .75  .93  .84  .87  .80  .66  .00 67.11 027  006
*EMP AVTS  AUTO MECH   .70  .60  .20  .70 1.00  .60 1.00  .80  .60  .30  .68  .68  .58  .93  .82  .79  .91  .66  .10 66.66 028  007
 COL AVTS  AUTO MECH   .50  .50  .00  .40  .70  .60 1.00  .40  .50  .60  .52  .68  .80  .87  .29  .41  .84  .66  .46 58.68 048  008
*ATCH AVTS AUTO MECH   .80  .80  .40  .70 1.00  .80 1.00  .00  .70  .90  .48  .68  .35  .90  .69  .36  .95  .66  .00 54.02 056T 009
*KC AVTS S AUTO MECH   .70  .70  .40  .70  .50  .50 1.00  .00  .30  .60  .80  .68  .09  .70  .91  .00  .80  .66  .00 43.17 062  010
```

Figure 122: Sample Output (Program Type)



```
                              KANSAS STATE DEPARTMENT OF EDUCATION
                               DIVISION OF VOCATIONAL EDUCATION
                                 INDUSTRIAL EDUCATION SECTION

                                 PROGRAM APPLICATION EVALUATION

****************************************************************************************************************************************
# SCHOOL    PROGRAM       PGP  ADM  A-C  INS  INT  FAC  PER  LDS  ANC  EVA  MNR  MNS  P-R  C-S  C-G  C-P  D-R  S-A  CON PRO-RA ORK   PRK
****************************************************************************************************************************************

 COF AVTS   CIT           .80  .80  .40  .70 1.00  .80 1.00  .80  .70  .70 1.00 1.00  .85 1.00  .97 1.00  .81  .50 1.00  88.20 001   001

 TOP AVTST  CIT           .60  .50  .20  .80 1.00 1.00 1.00  .70  .70  .30 1.00 1.00  .87  .95  .94  .98  .80  .50 1.00  85.55 002   002

 KC AVTS    WELDING       .70  .70  .40  .70 1.00  .80 1.00  .70  .70  .70 1.00 1.00  .75  .91  .93  .96  .80  .55 1.00  84.48 003   001

 LIB AVTS   WELDING       .90  .90  .60  .70 1.00 1.00 1.00  .60  .80  .80  .90 1.00  .75  .87  .79  .84  .89  .55  .80  82.61 004   002

 TOP AVTSW  CIT           .60  .50  .20  .70 1.00 1.00 1.00  .40  .70  .30 1.00 1.00  .80  .95  .94  .98  .80  .50 1.00  82.15 005   003

 TOP AVTS   WELDING       .60  .50  .20  .70 1.00 1.00 1.00  .40  .70  .30 1.00 1.00  .80  .92  .85  .90  .80  .55 1.00  80.91 006   003

*GOOD AVTS  COSMO         .80  .80  .20  .70 1.00  .70 1.00  .00  .70  .70 1.00 1.00  .68  .95  .96  .97  .91  .38  .80* 78.76 007   001

 LIB AVTS   AIR COND      .90  .90  .60  .50 1.00 1.00 1.00  .60  .80  .80  .52  .76 1.00  .83  .86  .93  .77 1.00  .04  78.04 008   001

 FT SC AVT  COSMO         .60  .60  .20  .70 1.00  .70 1.00  .00  .70  .60 1.00 1.00 1.00  .77  .76  .86  .87  .38  .00  77.22 009   002

 EMP AVTS   CARPENTRY     .70  .60  .20  .70 1.00  .70 1.00  .70  .60  .30  .32  .92 1.00  .91  .82  .90  .66  .33  .86  76.49 010   001

 LIB AVTS   AUTO MECH     .90  .90  .60  .80 1.00 1.00 1.00  .60  .80  .80  .84  .68  .77  .86  .78  .82  .91  .66  .00  75.75 011   001

 LIB AVTS   CARPENTRY     .90  .90  .60  .70 1.00 1.00 1.00  .60  .80  .80  .48  .92  .78  .81  .52  .64  .85  .33 1.00  75.04 012   002

 TOP AVTS   CIVIL TECH    .60  .50  .20  .80 1.00 1.00 1.00  .70  .70  .30  .52  .44  .81  .95  .89  .93  .80 1.00 1.00  74.20 013   001

*KC AVTS    COSMO         .70  .70  .40  .70 1.00  .80 1.00  .40  .70  .70 1,00 1.00  .62  .91  .91  .80  .85  .38  .12  74.19 014   003

*EMP AVTS   WELDING       .70  .60  .20  .60 1.00  .70 1.00 1.00  .60  .30  .84 1.00  .55  .88  .72  .66  .91  .55 1.00  73.89 015   004

 ATCH AVTS  IND ELC       .80  .80  .40  .70 1.00  .80 1.00  .10  .70  .80  .60  .80  .85  .83  .65  .74  .64  .13 1.00  72.70 016   001

*ATCH AVTS  WELDING       .80  .80  .40  .80 1.00  .80 1.00  .00  .70  .80  .96 1.00  .50  .90  .76  .66  .97  .55  .58  71.65 017   005

 TOP AVTS   PRINTING      .90  .50  .20  .70 1.00 1.00 1.00  .00  .70  .30  .56  .40 1.00  .90  .77  .87  .80  .05 1.00  71.05 018   001

 TOP AVTS   DRAFTING T    .60  .50  .20  .80 1.00 1.00 1.00  .80  .70  .30  .36  .28  .76  .96  .89  .92  .80 1.00 1.00  70.43 019   001

*KC AVTS    AUTO MECH     .70  .70  .40  .70 1.00  .80 1.00  .50  .70  .70  .80  .68  .73  .82  .67  .73  .96  .66  .00  70.03 020   002

 GOOD AVTS  COMM TECH     .80  .80  .20  .80 1.00  .70 1.00  .00  .70  .70  .12  .28 1.00  .97  .89  .96  .80 1.00  .76  69.76 021   001

*GOOD AVTS  AUTO MECH     .80  .80  .20  .80 1.00  .60 1.00  .50  .70  .70  .56  .68  .70  .95  .78  .80  .99  .66  .00  68.72 022   003

*COF AVTS   AUTO MECH     .80  .80  .40  .80 1.00  .80 1.00  .00  .70  .70  .56  .68  .66  .87  .85  .85  .77  .66  .45  68.18 023   004
```

Figure 123: Sample Output (All Program Summary)

BEST COPY AVAILABLE

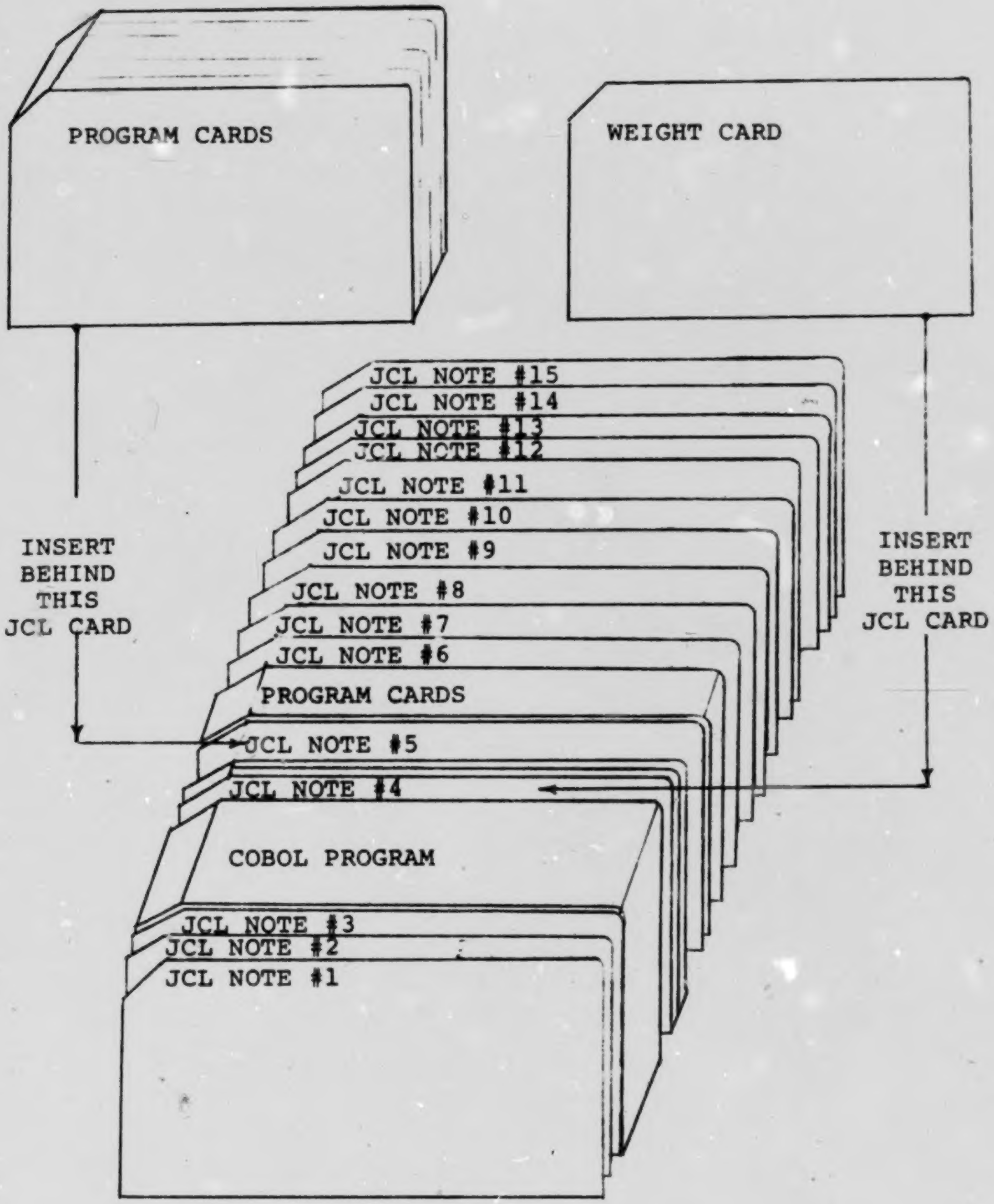


Figure 124:
Inserting Weight and Program Cards in JCL

```
JCL Note #1 //JDBCARD   JOB(XXXXXXXX,10),DLJ,CLASS=B
JCL Note #2 // EXEC COBUCLG
JCL Note #3 //SYSIN DD *
JCL Note #4 //GO.SYSIN1 DD *
JCL Note #5 //GO.SYSIN2 DD *
JCL Note #6 //GO.SYSPRINT DD SYSOUT=A
JCL Note #7 //GO.SYSOUT DD SYSOUT=A
JCL Note #8 //GO.SORTLIB DD DSN=SYS1.SORTLIB,DISP=SHR
JCL Note #9 //GO.SORTWK01 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
JCL Note #10//GO.SORTWK02 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
JCL Note #11//GO.SORTWK03 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
JCL Note #12//GO.SORTWK04 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
JCL Note #13//GO.SORTWK05 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
JCL Note #14//GO.SORTWK06 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
JCL Note #15/*
```

Figure 124:
Inserting Weight and Program Cards in JCL (continued)

Chapter 16

KANSAS VOCATIONAL EDUCATION BUDGETING MODULE

NEED FOR THE SYSTEM

Every spring, the staff of the Division of Vocational Education of the State Department of Education must determine a budget for every approved program in the state. The State Plan calls for this budgeting to take into account (1) local ability to pay for the program, (2) exceptional costs of the program due to program type or location of the program, and (3) manpower needs and vocational needs of the area and of the state. Additional budgeting problems are incurred when set aside funds for the disadvantaged and/or handicapped are distributed to supplement the training of these groups in regular vocational and technical programs.

In March of 1973, Dr. R. B. Daniels of the State Department of Education staff requested that Dr. Robert Scott of Kansas State University initiate a study of possible funding schemes which (1) would fully meet the requirements of the State Plan, (2) would be easy to understand, (3) would be automated to eliminate the costly expenditure of manhours in preparing budgets and the possibility of mistakes due to hand calculation of data, and (4) would be compatible with the Program Application Evaluation System developed earlier in the year by the State Department of Education.

GENERAL SYSTEM DESCRIPTION

This system is directly tied to the Program Evaluation System and is based on the philosophy that if a program is worth approving, then it is worth funding at an operational level. The base allotment (operating budget) is composed of two types of funds, i.e., local money available to finance the program and state and federal money needed to bring the funds available up to the operating level. An operating budget is determined and the local money available is compared to this figure. If additional money is needed to bring the available funding to the operating level, then state and federal money is added as needed. When an institution is making less than a maximum effort to fund the program with local funds, the state makes less than a maximum effort to provide the additional funds needed for the operating level. This reduction in state effort is directly proportional to the reduction of local effort. Another type of money used to finance the programs above the operating level is incentive money which is distributed on the basis of program application evaluation with better programs receiving more incentive money. The incentive monies never constitute more than ten percent of the total budget and in most cases constitute less than five percent. The disadvantaged and handicapped funds are distributed on the basis of number of disadvantaged and handicapped students enrolled at a certain number of dollars per student. These monies are not part of the operating budget or incentive funds and can only be used to supplement the training of the disadvantaged and handicapped students. Figure 125 represents a graphic depiction of the Budgeting System concept.

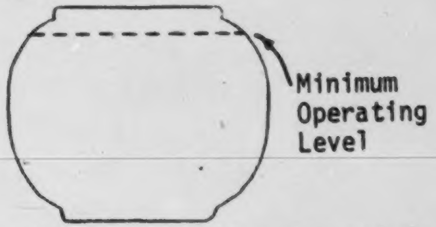
INPUT DESCRIPTION

Two types of data cards are required as input to the system. The first input card (one card for the entire state) contains total state and federal funds available and total disadvantaged and handicapped funds available while the second type of input card (one card for each program to be budgeted) contains operating budget plus 10 percent, local funds available to support the program, proposed local effort, program rating, number of disadvantaged and handicapped students enrolled in the program and school and program identifiers.

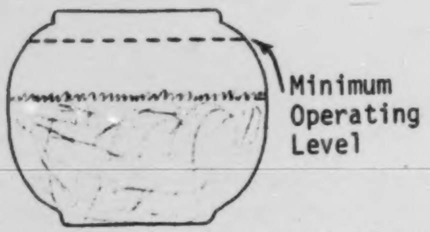
DEFINITION OF INPUT VARIABLES

Total State and Federal Funds

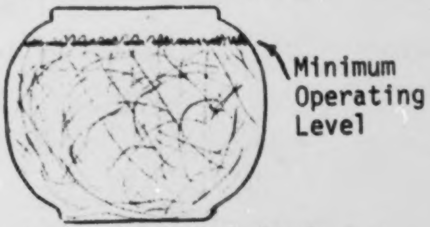
Total state and federal funds refers to that amount of money available from the Kansas State Department of Education to pay for vocational program operating costs.



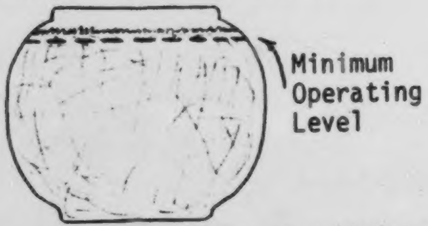
1. The size of the money pot is determined. (Size is based on costs of types ff programs plus exception costs related to the location of the program).



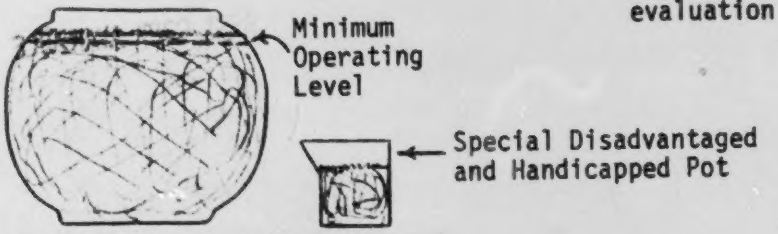
2. All local money available to support the program is put in the money pot. (At the planning state, this figure is called local ability to pay.)*



3. State and local funds are added to the money pot until the total monies in the pot are equal to the minimum operating level.



4. Incentive money is added to the money pot. The incentive money is never more than 10% of the total budget and normally less than 5%. (The distribution of incentive money is based on program rating from the program evaluation system).



5. Disadvantaged and handicapped monies are provided in a special pot and are distributed on the basis of number of disadvantaged and handicapped students. These monies must be used to supplement the training of disadvantaged and handicapped students.

*If local effort is less than local ability, all state effort will be reduced relative to the local effort/local ability rates.

Figure 125: A graphic display of the Budgeting System concept.

Total Disadvantaged and Handicapped Funds

Total disadvantaged and handicapped funds refers to that amount of set aside money which will be used to supplement training of disadvantaged and handicapped students enrolled in regular programs. Normally, this is the money which remains in the state set aside budget after special programs have been financed.

Local Funds Available to Support a Program

Local funds available to support a program include (1) foundation money, (2) two mill money, (3) tuition paid by students, (4) junior college support, and (5) other sources of financial support. Each state supervisor is responsible for determining the local ability to pay for the programs which he approves. Most of this data can be obtained from the Program Application Form (See Program Application Evaluation System).

Local Effort

Local effort is that amount of local funds available to support the program that institution proposes to commit to the program budget. This data is found on the program application form.

Operating Budget

The operating budget for each approved program is determined by the state supervisor responsible for the program. Each state supervisor will be allowed to submit operating budgets for programs he approves which total to the amount of state and federal money budgeted for his section plus the local funds available to support the programs. Operating budgets should be figured on the basis of the minimum amount needed plus ten percent.

The following formula describes how a supervisor can determine the total of his operating budgets.

Total of Supervisor's Operating Budgets = State and Federal Money Budget Established for Supervisor by State Director + Local Funds Available for Supervisor's Programs

The following formula describes the relationship between the state supervisor's total of operating budgets and the operating budgets he approves.

Total of Supervisor's Operating Budgets = Program 1 Budget + Program 2 Budget +.. ...+ Program N Budget

The following formula describes the relationship between total state and federal money available and supervisor's share of state and federal money.

Total State and Federal Money = Amount Budgeted for Supervisor 1 + Amount Budgeted for Supervisor 2 +.. Amount Budgeted for Supervisor N

Program Ratings

Each program approved has been given a program rating by the Program Application Evaluation System. This numeric value is used as input in the Budgeting System.

Number of Disadvantaged and Handicapped Enrolled

The K-MUST Disadvantaged and Handicapped System provides data on the number of disadvantaged and handicapped persons enrolled by program. This figure is used as input for the Budgeting System.

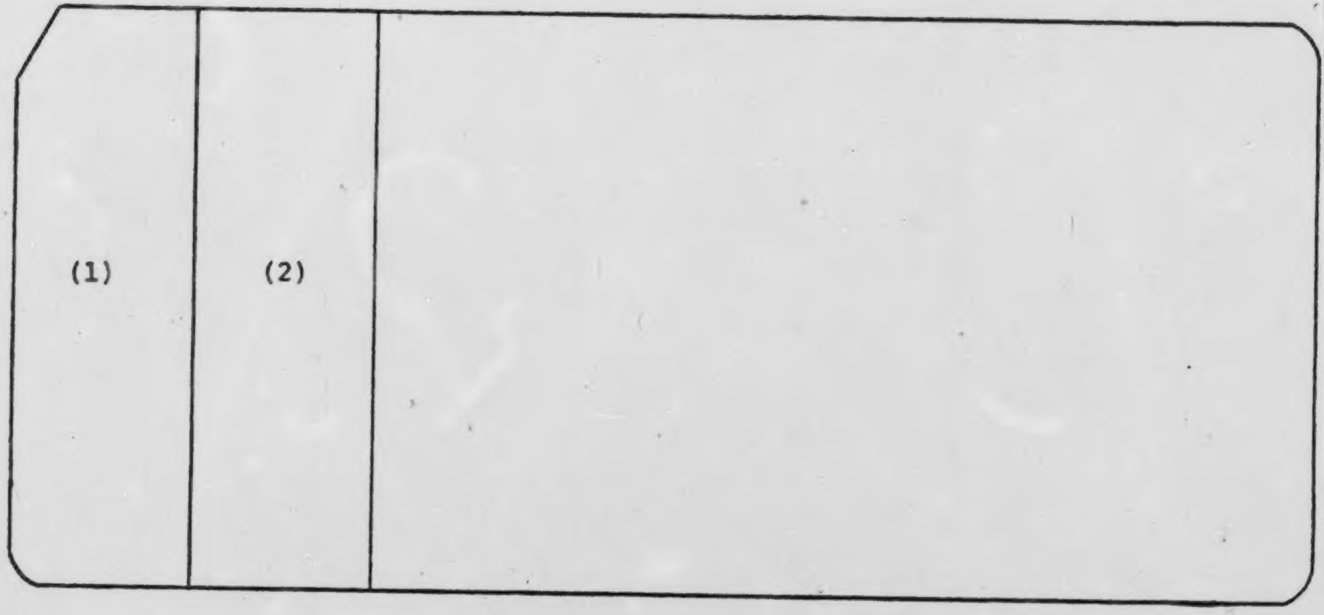
PREPARING DATA FOR COMPUTER INPUT

Keypunching Card Type One

The total state and federal budget is punched in card columns 1 through 10 with two assumed decimal places. (Note: Do not punch in a decimal point but add two zeroes to the dollar amount if necessary to the right of the assumed decimal). The disadvantaged and handicapped budget is punched in card columns 11 through 20 with two assumed decimal places. In both cases, the data entry is right justified. Figure 126 presents a graphic description of the card type one layout.

Coding for Card Type Two

The state supervisors complete a data line on Coding Sheet F-1 for each program. It is important that each school have a standard abbreviation



	Col.	Items
(1)	1-10	State and Federal Funds
(2)	11-20	Disadvantaged and Handicapped Funds

Figure 126: Card Type One Layout

in the coding so that school totals can be computed. Figure 127 depicts Coding Sheet F-1.

Keypunching Card Type Two

Card type two requires that minimum operating budget, local funds available, local effort, program rating and number of disadvantaged and handicapped enrolled be entered opposite the school and program identifier. Figure 128 presents a graphic description of the layout for card type two. There are two assumed decimal places for minimum operating budget, local funds available, local effort and program rating. Again, no decimal point should be punched. All data entries should be right justified in the prescribed field.

Card File Position in Computer Software

Figure 129 presents a graphic description of how the card file (comprised of a type one card followed by type two cards) is inserted into the computer software.

COMPUTER PROCESSING

The computer software in this system consists of a single program called PROGRAM-FUNDING. The program is written in IBM OS AMERICAN STANDARD COBOL; needs a maximum of 128 K on an IBM 360 50H; and processes 100 records in less than two minutes.

The program first determines the maximum percent (divisible by five) of the approved budget that can be funded with available local, state and federal funds. Excess money (those monies above the maximum percent and hence less than five percent of the approved budget) are distributed on the basis of program ratings from the Program Application Evaluation System. Finally, disadvantaged and handicapped funds are distributed on the basis of number of disadvantaged and handicapped students enrolled in the program.

Figure 130 is a flow chart of the computer software, Figure 131 is a listing and Figure 132 is an example of the computer output report.

CODING SHEET F-1

(DATA FOR THE BUDGETING SYSTEM)

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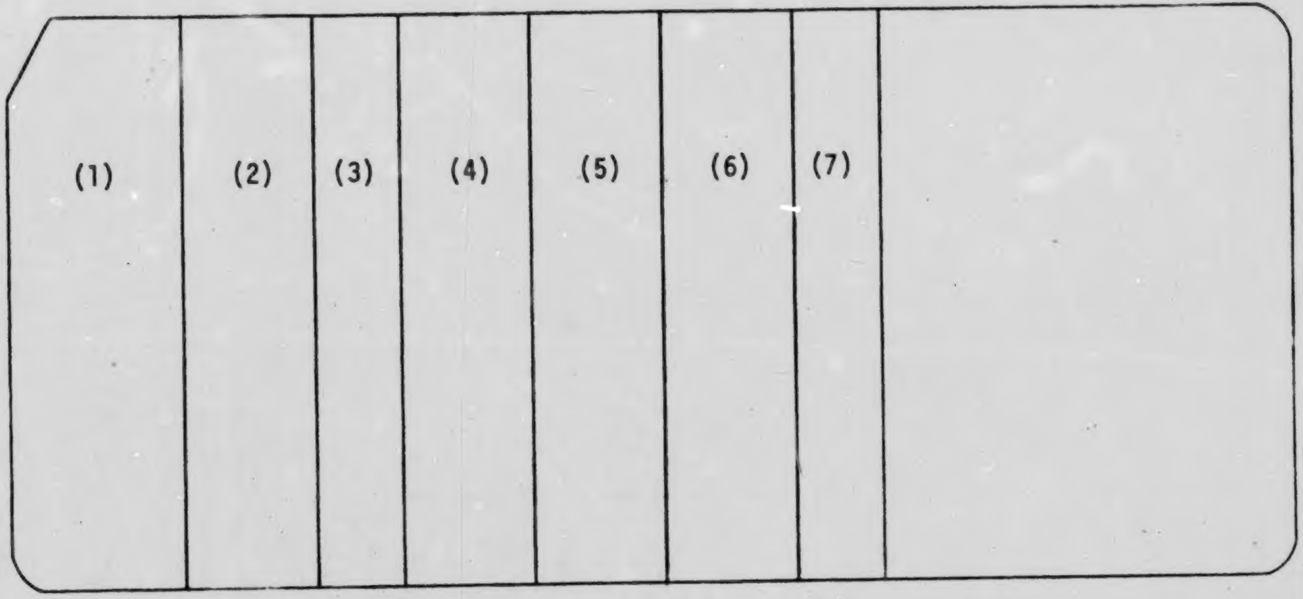
School Name (Abbreviated)	Program Name (Abbreviated)	Program Rating (From Program Application Evaluation System)	Approved Budget	Local Funds Available (From Program Application Form)	Local Effort	No. Dis and Han Enrolled (Dis and Han Sys)
cc 1-9	cc 10-19	cc 20-24	cc 25-32	cc 33-40	cc 41-48	cc 49-52

Figure 127: Coding Sheet F-1



	Col.	Items		Col.	Items
(1)	1-9	School Name	(5)	33-40	Local Funds Available
(2)	10-19	Program Name	(6)	41-48	Local Effort
(3)	20-24	Program Rating	(7)	49-52	Number Disadvantaged and Handicapped
(4)	25-32	Approved Budget			

Figure 128: Card Type Two Layout

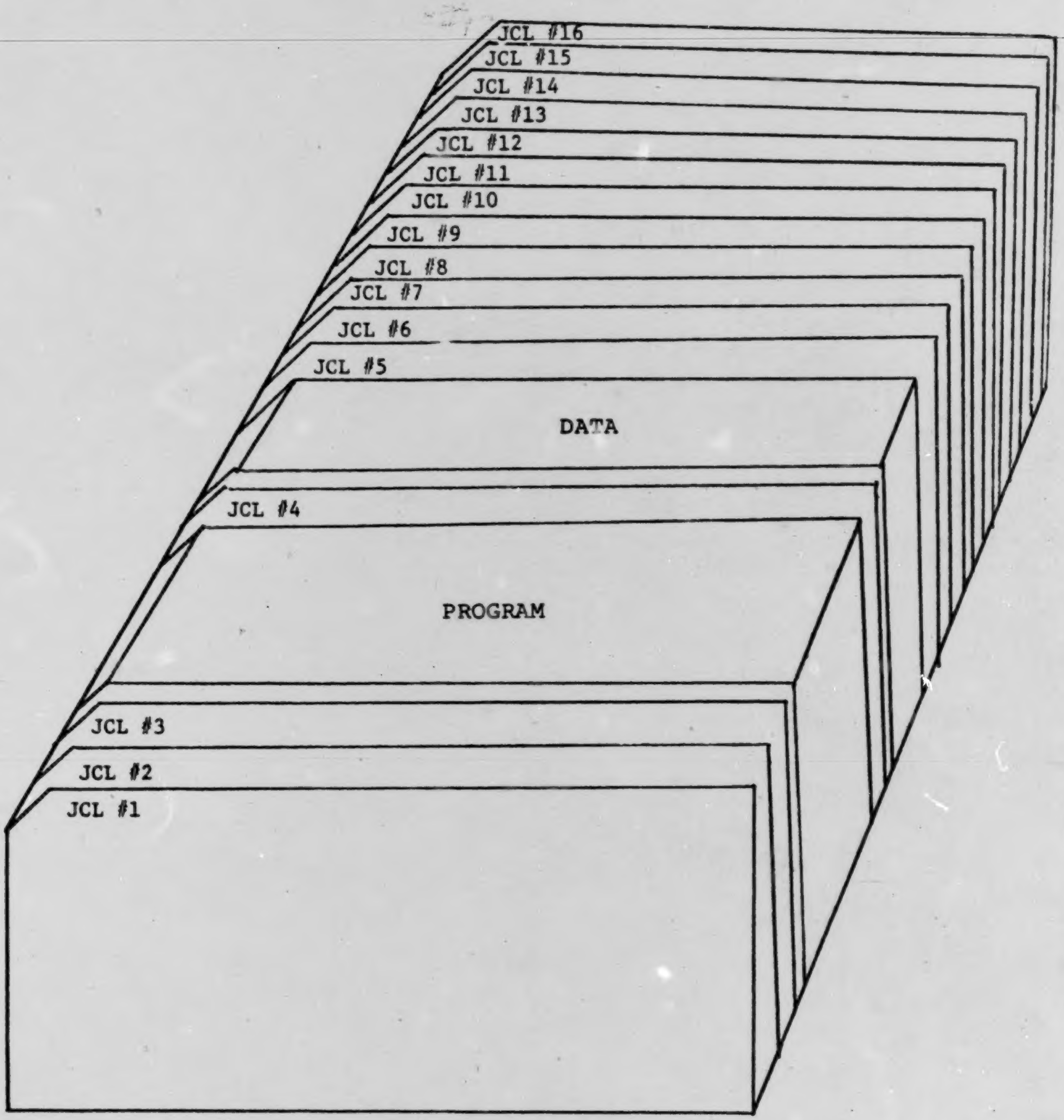


Figure 129: Software Setup for Budgeting System

```
//JOBCARD  JOB (EBH250H8,10,3,,1602),JONES,CLASS=A
// EXEC COBUCLG
//SYSIN DD *
//GO.SYSIN3 DD *
//GO.SYSIN1 DD UNIT=SYSDA,SPACE=(TRK,(30,10)
//GO.SYSIN2 DD UNIT=SYSDA,SPACE=(TRK,(30,10)
//GO.SYSPRINT DD SYSOUT=A
//GO.SYSOUT DD SYSOUT=A
//GO.SORTLIB DD DSN=SYS1.SORTLIB,DISP=SHR
//GO.SORTWK01 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
//GO.SORTWK02 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
//GO.SORTWK03 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
//GO.SORTWK04 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
//GO.SORTWK05 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
//GO.SORTWK06 DD UNIT=SYSDA,SPACE=(TRK,(10,10))
/*
```

Figure 129: Software Setup for Budgeting System (Cont.)

1. Open Files
2. Read total state and federal funds and total disadvantaged and handicapped funds
3. Read data on individual program
4. Add number of disadvantaged and handicapped in program to total disadvantaged and handicapped in the state
5. Add program rating to total rating points
6. Write program record on level 2 file
7. Close level 1 file and level 2 file
8. Sort level 2 file on school name
9. Compute the number of disadvantaged and handicapped dollars for each disadvantaged and handicapped student in the state
10. Open the level 2 file as input
11. Read level 2 file record
12. Compute the base funds for the program by multiplying the base ratio (initially estimated as .90) times the approved budget and subtract the local funds available
13. Base funds less than zero?
14. Reset base funds to zero
15. Add base funds for the program to total base funds for the state
16. Add approved budget for the program to total budget for the state
17. Set aside funds for the program are computed as equal to the dollars per student times the number of disadvantaged and handicapped students in the program
18. Add disadvantaged and handicapped funds for the program to total set-aside funds for the state
19. Write program record on level 3 file

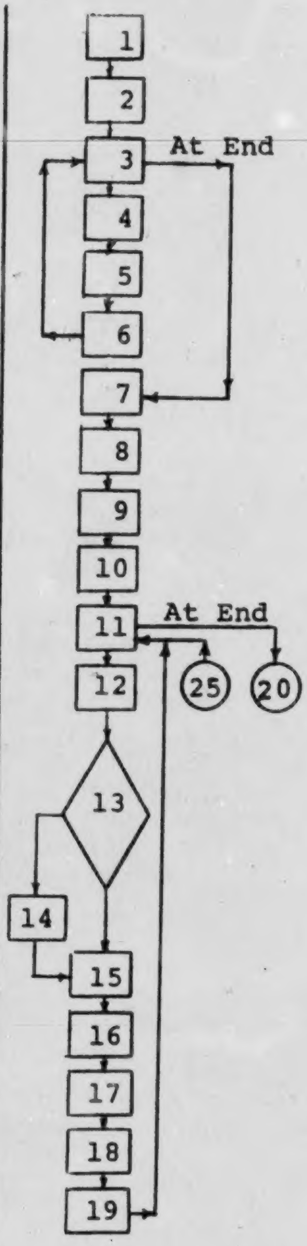


Figure 130: Flow Chart of Computer Software for Budgeting System

20. Close level 2 and level 3 files
21. Compute incentive money which is that money left over when base money is deducted from the total state and federal money
22. Is incentive money greater than zero
23. Open (input) level 2 file, (output) level 3 file
24. Reset total base, total budget and total set aside funds to zero
25. Subtract .05 from base ratio (Note: Base ratio was too high for funds available.)
26. Open (input) level 3 file, (output) level 2 file
27. Compute the number of dollars to be awarded for each program rating point by dividing incentive dollars by total number of rating points
28. Read level 3 file record
29. Compute incentive funds for the program equal to incentive funds per point times the program rating
30. Compute the budget as equal to the local funds plus the base funds plus the incentive funds for the program
31. Is the computed budget greater than the approved budget?
32. Compute the excess which is equal to the amount the budget exceeds the approved budget
33. Decrease the local funds so that the budget will equal the approved budget
34. Write level 2 file record
35. Close level 2 and level 3 files
36. Open level 2 file
37. Write Page Headings

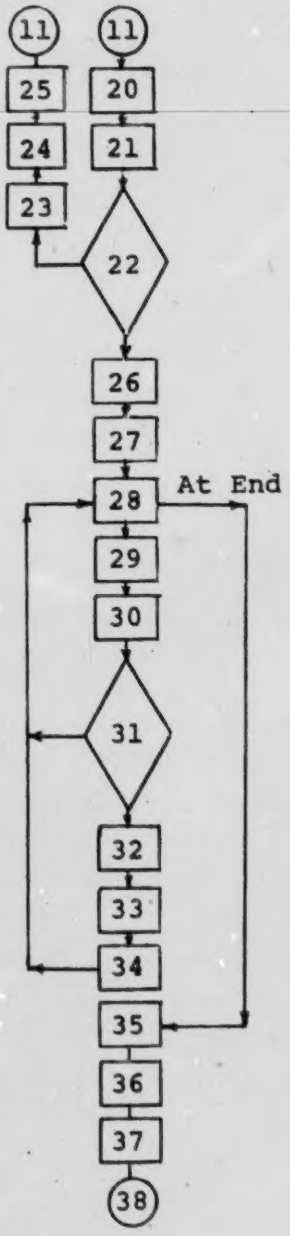


Figure 130: Flow Chart of Computer Software for Budgeting System (Cont.)

38. Read program record from level 2 file
39. Is the record from a new school?
40. Write school totals data
41. Reset school total fields
42.. Write program data
43. Add program data to school summary and state summary
44. Need new page
45. Write Page Headers
46. Write state totals
47. Wrapup routine

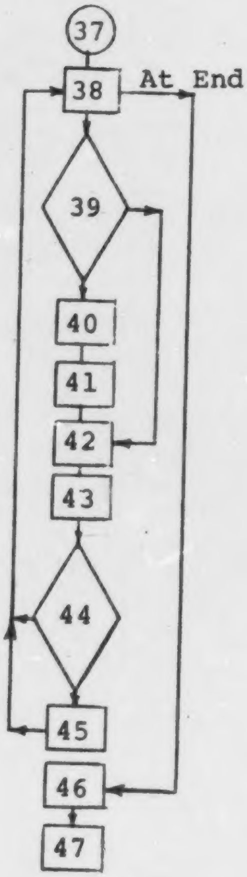


Figure 130: Flow Chart of Computer Software for Budgeting System (Cont.)

```
IDENTIFICATION DIVISION.
PROGRAM-ID. PROGRAM-FUNDING.
AUTHOR. DR. HARRIS AND DAVE JONES.
INSTALLATION. KANSAS STATE UNIVERSITY.
REMARKS.

    ***************************************************************
    *                                                             *
    *  THIS SOFTWARE WILL COMPUTE PROGRAM BUDGETS BY SCHOOLS      *
    * AND PROVIDE A LISTING OF SAME.  THE PRINCIPLE FEATURE       *
    * IS THAT IT ALLOCATES MONIES ON THE LOCAL ABILITY TO         *
    * PAY, EXCESSIVE COST OF PARTICULAR TYPES OF PROGRAMS         *
    * THE QUALITY OF PROGRAM AND THE NUMBER OF DISADVANTAGED      *
    * AND HANDICAPPED.                                            *
    *                                                             *
    ***************************************************************.

ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER. IBM-360-H50.
OBJECT-COMPUTER. IBM-360-H50.
INPUT-OUTPUT SECTION.
FILE-CONTROL.
    SELECT PRINT-FILE ASSIGN TO UT-S-SYSPRINT.
    SELECT HOLD1-FILE ASSIGN TO UT-S-SYSIN1.
    SELECT HOLD2-FILE ASSIGN TO UT-S-SYSIN2.
    SELECT CARD-FILE ASSIGN TO UT-S-SYSIN3.
    SELECT SORT-FILE ASSIGN TO UT-S-SORTWK01.
DATA DIVISION.
FILE SECTION.
SD  SORT-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    DATA RECORD IS SORT-REC.
01  SORT-REC.
    02 KEY-1                          PICTURE X(9).
    02 FILLER                         PICTURE X(71).
FD  PRINT-FILE
    RECORDING MODE IS F
    LABEL RECORDS ARE STANDARD
    RECORD CONTAINS 133 CHARACTERS
    DATA RECORD IS P-LINE.
01  P-LINE                            PICTURE X(133).
FD  CARD-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS CARD-IN.
01  CARD-IN                           PICTURE X(80).
```

Figure 131: Budgeting System Software (PROGRAM-FUNDING)

```
FD  HOLD2-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS HOLD2-LINE.
01  HOLD2-LINE                  PICTURE X(80).
FD  HOLD1-FILE
    RECORDING MODE IS F
    RECORD CONTAINS 80 CHARACTERS
    LABEL RECORDS ARE OMITTED
    DATA RECORD IS HOLD1-LINE.
01  HOLD1-LINE                  PICTURE X(80).
WORKING-STORAGE SECTION.
01  PROGRAM-RECORD-AREA.
    02 SCHOOL-NAME              PICTURE X(9).
    02 PROGRAM-NAME             PICTURE X(10).
    02 PROGRAM-RATING           PICTURE 999V99.
    02 APPROVED-BUDGET          PICTURE 999999V99.
    02 LOCAL-FUNDS              PICTURE 999999V99.
    02 NO-D-AND-H               PICTURE 999.
    02 BASE-FUNDS               PICTURE S999999V99.
    02 INCENTIVE-FUNDS          PICTURE 999999V99.
    02 SET-ASIDE-FUNDS          PICTURE 999999V99.
    02 PROGRAM-BUDGETS          PICTURE 99999999V99.
01  STATE-FUNDING.
    02 REGULAR-MONEY-AVAILABLE  PICTURE 99999999V99.
    02 D-AND-H-MONEY-AVAILABLE  PICTURE 99999999V99.
01  VARIABLE-AREA.
    02 TOTAL-BUDGET             PICTURE 99999999V99 VALUE 0.
    02 TOTAL-INCENTIVE          PICTURE S99999999V99 VALUE 0.
    02 TOTAL-RATING-POINTS      PICTURE 99999999V99 VALUE 0.
    02 TOTAL-BASE               PICTURE 99999999V99 VALUE 0.
    02 DOLLAR-PER-POINT         PICTURE 99999999V99 VALUE 0.
    02 EXCESS                   PICTURE 99999999V99 VALUE 0.
    02 BASE-RATIO               PICTURE 9V99 VALUE .90.
    02 BUDGET                   PICTURE 99999999V99 VALUE 0.
    02 LINE-CT                  PICTURE 999 VALUE 99.
    02 LOCAL-SCHOOL             PICTURE 99999999V99 VALUE 0.
    02 BASE-SCHOOL              PICTURE 99999999V99 VALUE 0.
    02 INCENTIVE-SCHOOL         PICTURE 99999999V99 VALUE 0.
    02 SET-ASIDE-SCHOOL         PICTURE 99999999V99 VALUE 0.
    02 TOTAL-SCHOOL             PICTURE 99999999V99 VALUE 0.
    02 LOCAL-STATE              PICTURE 99999999V99 VALUE 0.
    02 BASE-STATE               PICTURE 99999999V99 VALUE 0.
    02 INCENTIVE-STATE          PICTURE 99999999V99 VALUE 0.
    02 SET-ASIDE-STATE          PICTURE 99999999V99 VALUE 0.
    02 TOTAL-D-AND-H            PICTURE 999999 VALUE ZEROES.
    02 DOLLAR-PER-STUDENT       PICTURE 99999999V99 VALUE 0.
    02 TOTAL-SET-ASIDE          PICTURE 99999999V99 VALUE 0.
    02 TOTAL-STATE              PICTURE 99999999V99 VALUE 0.
```

Figure 131: Budgeting System Software (PROGRAM-FUNDING) (Cont.)

```
01  HEAD1.
    02 CC                              PICTURE X(39) VALUE SPACES.
    02 HDD                             PICTURE X(54) VALUE
       'KANSAS STATE DEPARTMENT OF EDUCATION'.
01  HEAD2.
    02 CC                              PICTURE X(41) VALUE SPACES.
    02 HDD                             PICTURE X(54) VALUE
       'DIVISION OF VOCATIONAL EDUCATION'.
01  HEAD3.
    02 CC                              PICTURE X(43) VALUE SPACES.
    02 HDD                             PICTURE X(54) VALUE
       'INDUSTRIAL EDUCATION SECTION'.
01  HEAD4.
    02 CC                              PICTURE X(43) VALUE SPACES.
    02 HDD                             PICTURE X(54) VALUE
       'PROGRAM FUNDING DISBURSEMENT'.
01  HEAD5.
    02 CC                              PICTURE X(48) VALUE
       '              **********************************'.
    02 HDD                             PICTURE X(51) VALUE
       '***************************************************'.
01  HEAD6.
    02 CC                              PICTURE X(15) VALUE SPACES.
    02 HDD                             PICTURE X(53) VALUE
       ' SCHOOL    PROGRAM             LOCAL      STATE-FED    STATE'.
    02 HDX                             PICTURE X(30) VALUE
       '-FED    STATE-FED TOTAL BUDGET'.
01  HEAD7.
    02 CC                              PICTURE X(40) VALUE SPACES.
    02 HDD                             PICTURE X(48) VALUE
       'MONEY         BASE             INCENTIVE    SET-ASIDE'.
01  OUTLINE.
    02 CC                              PICTURE X(15) VALUE SPACES.
    02 SCHOOL-OUT                      PICTURE X(10) VALUE SPACES.
    02 PROGRAM-OUT                     PICTURE X(10) VALUE SPACES.
    02 LOCAL-MONEY-OUT                 PICTURE ZZZZZZZZZ.99.
    02 STATE-FED-BASE-OUT              PICTURE ZZZZZZZZZZ.99.
    02 STATE-FED-INCENTIVE-OUT         PICTURE ZZZZZZZZZZ.99.
    02 STATE-FED-SET-ASIDE-OUT         PICTURE ZZZZZZZZZZ.99.
    02 TOTAL-BUDGET-OUT                PICTURE ZZZZZZZZZZ.99.
PROCEDURE DIVISION.
OPEN-FILE.
    OPEN INPUT CARD-FILE OUTPUT PRINT-FILE HOLD1-FILE HOLD2-FILE.
READ-STATE-FUNDS.
    READ CARD-FILE INTO STATE-FUNDING AT END GO TO ERROR1.
READ-PROGRAM-RECORD1.
    READ CARD-FILE INTO PROGRAM-RECORD-AREA AT END GO TO
      SORT-HOLD-FILE.
    ADD NO-D-AND-H TO TOTAL-D-AND-H.
    ADD PROGRAM-RATING TO TOTAL-RATING-POINTS.
    WRITE HOLD1-LINE FROM PROGRAM-RECORD-AREA.
    GO TO READ-PROGRAM-RECORD1.
```

Figure 131: Budgeting System Software (PROGRAM-FUNDING) (Cont.)

```
SORT-HOLD-FILE.
    CLOSE HOLD1-FILE CARD-FILE.
    SORT SORT-FILE ASCENDING KEY KEY-1 INPUT PROCEDURE
     INPUT-PROCEDURE OUTPUT PROCEDURE OUTPUT-PROCEDURE.
    COMPUTE DOLLAR-PER-STUDENT = D-AND-H-MONEY-AVAILABLE /
     TOTAL-D-AND-H.
    OPEN INPUT HOLD1-FILE.
READ-PROGRAM-RECORD2.
    READ HOLD1-FILE INTO PROGRAM-RECORD-AREA AT END GO TO
     RESET-FILES.
    COMPUTE BASE-FUNDS = BASE-RATIO * APPROVED-BUDGET -
     LOCAL-FUNDS.
    IF BASE-FUNDS < 0 MOVE ZEROES TO BASE-FUNDS.
    ADD BASE-FUNDS TO TOTAL-BASE.
    ADD APPROVED-BUDGET TO TOTAL-BUDGET.
    COMPUTE SET-ASIDE-FUNDS = DOLLAR-PER-STUDENT * NO-D-AND-H.
    ADD SET-ASIDE-FUNDS TO TOTAL-SET-ASIDE.
    WRITE HOLD2-LINE FROM PROGRAM-RECORD-AREA.
    GO TO READ-PROGRAM-RECORD2.
RESET-FILES.
    CLOSE HOLD1-FILE HOLD2-FILE.
DETERMINE-INCENTIVE-FUNDS.
    COMPUTE TOTAL-INCENTIVE = REGULAR-MONEY-AVAILABLE -
     TOTAL-BASE.
    IF TOTAL-INCENTIVE NOT > 0 OPEN INPUT HOLD1-FILE OUTPUT
     HOLD2-FILE MOVE ZEROES TO TOTAL-SET-ASIDE TOTAL-BASE
     TOTAL-BUDGET SUBTRACT .05 FROM BASE-RATIO GO TO
     READ-PROGRAM-RECORD2.
    OPEN INPUT HOLD2-FILE OUTPUT HOLD1-FILE.
    COMPUTE DOLLAR-PER-POINT = TOTAL-INCENTIVE /
     TOTAL-RATING-POINTS.
READ-PROGRAM-RECORD3.
    READ HOLD2-FILE INTO PROGRAM-RECORD-AREA AT END GO TO
     RESET-FILES-AGAIN.
    COMPUTE INCENTIVE-FUNDS = DOLLAR-PER-POINT * PROGRAM-RATING.
    COMPUTE BUDGET = INCENTIVE-FUNDS + LOCAL-FUNDS + BASE-FUNDS.
    IF BUDGET NOT > APPROVED-BUDGET MOVE BUDGET TO
     PROGRAM-BUDGETS WRITE HOLD1-LINE FROM PROGRAM-RECORD-AREA
     GO TO READ-PROGRAM-RECORD3.
    COMPUTE EXCESS = BUDGET - APPROVED-BUDGET.
    COMPUTE LOCAL-FUNDS = LOCAL-FUNDS - EXCESS.
    MOVE APPROVED-BUDGET TO PROGRAM-BUDGETS.
    WRITE HOLD1-LINE FROM PROGRAM-RECORD-AREA.
    GO TO READ-PROGRAM-RECORD3.
RESET-FILES-AGAIN.
    CLOSE HOLD2-FILE HOLD1-FILE.
    OPEN INPUT HOLD1-FILE.
```

Figure 131: Budgeting System Software (PROGRAM-FUNDING) (Cont.)

```
WRITE-DATA.
    IF LINE-CT > 55 PERFORM PRINT-HEADER.
    READ HOLD1-FILE INTO PROGRAM-RECORD-AREA, AT END
     GO TO FINISH.
    IF SCHOOL-OUT = SPACES MOVE SCHOOL-NAME TO SCHOOL-OUT.
    IF SCHOOL-OUT NOT = SCHOOL-NAME PERFORM CHANGE-SCHOOLS.
    MOVE SCHOOL-NAME TO SCHOOL-OUT.
    MOVE PROGRAM-NAME TO PROGRAM-OUT.
    MOVE LOCAL-FUNDS TO LOCAL-MONEY-OUT.
    MOVE BASE-FUNDS TO STATE-FED-BASE-OUT.
    MOVE INCENTIVE-FUNDS TO STATE-FED-INCENTIVE-OUT.
    MOVE SET-ASIDE-FUNDS TO STATE-FED-SET-ASIDE-OUT.
    MOVE PROGRAM-BUDGETS TO TOTAL-BUDGET-OUT.
    ADD LOCAL-FUNDS TO LOCAL-STATE LOCAL-SCHOOL.
    ADD BASE-FUNDS TO BASE-STATE BASE-SCHOOL.
    ADD INCENTIVE-FUNDS TO INCENTIVE-STATE INCENTIVE-SCHOOL.
    ADD SET-ASIDE-FUNDS TO SET-ASIDE-STATE SET-ASIDE-SCHOOL.
    ADD PROGRAM-BUDGETS TO TOTAL-STATE  TOTAL-SCHOOL.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 2 LINES.
    ADD 2 TO LINE-CT.
    GO TO WRITE-DATA.
PRINT-HEADER.
    WRITE P-LINE FROM HEAD1 AFTER POSITIONING 0 LINES.
    WRITE P-LINE FROM HEAD2 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD3 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD4 AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 3 LINES.
    WRITE P-LINE FROM HEAD6 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD7 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 1 LINES.
    MOVE 12 TO LINE-CT.
CHANGE-SCHOOLS.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 2 LINES.
    MOVE LOCAL-SCHOOL TO LOCAL-MONEY-OUT.
    MOVE BASE-SCHOOL TO STATE-FED-BASE-OUT.
    MOVE INCENTIVE-SCHOOL TO STATE-FED-INCENTIVE-OUT.
    MOVE SET-ASIDE-SCHOOL TO STATE-FED-SET-ASIDE-OUT.
    MOVE TOTAL-SCHOOL TO TOTAL-BUDGET-OUT.
    MOVE 'TOTAL' TO PROGRAM-OUT.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 1 LINES.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 1 LINES.
    MOVE ZEROES TO LOCAL-SCHOOL BASE-SCHOOL INCENTIVE-SCHOOL
     SET-ASIDE-SCHOOL TOTAL-SCHOOL.
    ADD 4 TO LINE-CT.
```

Figure 131: Budgeting System Software (PROGRAM-FUNDING) (Cont.)

```
FINISH.
    PERFORM CHANGE-SCHOOLS.
    MOVE '    GRAND' TO SCHOOL-OUT.
    MOVE 'TOTAL' TO PROGRAM-OUT.
    MOVE LOCAL-STATE TO LOCAL-MONEY-OUT.
    MOVE BASE-STATE TO STATE-FED-BASE-OUT.
    MOVE INCENTIVE-STATE TO STATE-FED-INCENTIVE-OUT.
    MOVE SET-ASIDE-STATE TO STATE-FED-SET-ASIDE-OUT.
    MOVE TOTAL-STATE TO TOTAL-BUDGET-OUT.
    WRITE P-LINE FROM HEAD5 AFTER POSITIONING 2 LINES.
    WRITE P-LINE FROM OUTLINE AFTER POSITIONING 2 LINES.
    CLOSE PRINT-FILE HOLD1-FILE.
    STOP RUN.
ERROR1.
    CLOSE CARD-FILE PRINT-FILE HOLD1-FILE HOLD2-FILE.
    STOP RUN.
INPUT-PROCEDURE SECTION.
    OPEN INPUT HOLD1-FILE.
READ-REC.
    READ HOLD1-FILE INTO PROGRAM-RECORD-AREA AT END GO TO
     CLOSE-FILE.
    RELEASE SORT-REC FROM PROGRAM-RECORD-AREA.
    GO TO READ-REC.
CLOSE-FILE.
    CLOSE HOLD1-FILE.
OUTPUT-PROCEDURE SECTION.
    OPEN OUTPUT HOLD1-FILE.
RELEASE-RECORD.
    RETURN SORT-FILE INTO PROGRAM-RECORD-AREA AT END GO TO
     CLEAN-UP.
    WRITE HOLD1-LINE FROM PROGRAM-RECORD-AREA.
    GO TO RELEASE-RECORD.
CLEAN-UP.
    CLOSE HOLD1-FILE.
```

Figure 131: Budgeting System Software (PROGRAM-FUNDING) (Cont.)

```
              KANSAS STATE DEPARTMENT OF EDUCATION
                DIVISION OF VOCATIONAL EDUCATION
                  INDUSTRIAL EDUCATION SECTION

                  PROGRAM FUNDING DISBURSEMENT

*******************************************************************************
  SCHOOL    PROGRAM        LOCAL       STATE-FED     STATE-FED    STATE-FED TOTAL BUDGET
                           MONEY         BASE        INCENTIVE    SET-ASIDE
*******************************************************************************
*******************************************************************************

ATCH AVTS AUTO MECH      17333.79      13017.20      1167.91       651.00      31518.90

ATCH AVTS AUTO BODY      13331.35      10011.10      1181.96       455.70      24524.41

ATCH AVTS PRINTING       14187.50      10654.42      1253.09       390.60      26095.01

ATCH AVTS DRAFTING T      8026.41       6027.62      1417.19       520.80      15471.22

ATCH AVTS CARPENTRY       6423.58       4958.29      1463.45       390.60      12845.32

ATCH AVTS WELDING         8332.53       6257.49      1549.07       195.30      16139.09

ATCH AVTS IND ELC         8011.69       6024.76      1571.77       195.30      15608.22

*******************************************************************************
ATCH AVTS TOTAL          75646.85      56950.88      9604.44      2799.30     142202.17
*******************************************************************************
```

Figure 132: Sample Computer Output for Budgeting System

Chapter 17

DATA DISSEMINATION AND FEEDBACK MODULE

INTRODUCTION

In the spring of 1972, it became apparent that the data produced by the K-MUST System must be explained to users before maximum benefits could be derived. State supervisors determined that the explanation should include (1) how the data was developed, (2) expected accuracy of the data and (3) how administrators can use the data in the planning process.

It was requested that the K-MUST Project employ a data disseminator whose function would be coordination between the project and potential users, i.e., school superintendents, counselors, area school directors, state supervisors, and representatives of other relevant training organizations. A formal Data Dissemination System was required within which the data disseminator would operate. This chapter presents the Data Dissemination System developed by the K-MUST staff.

SYSTEM DESCRIPTION

The Data Dissemination System is based on five techniques developed to promote awareness of manpower needs data and feedback to reinforce this awareness. The five dissemination techniques are (1) mailouts of data to potential users, (2) personal contact with potential users, (3) presentations at educational meetings, (4) inservice training, and (5) mass media releases. Feedback from each type of contact normally leads to requests for further information.

Figure 133 depicts the Data Dissemination System in graphic form. An examination of this figure indicates that the system, once started, is self-generating.

Each January, 1200 copies of the K-MUST Cycle Report containing summary data for vocational and technical education planners is published.

A copy of the report is mailed to the following educational personnel and/or organizations: Kansas USD administrators, principal libraries in Kansas, head counselors in the USD's, Research Coordinating Unit directors in other states, Kansas Area Vocational and Technical School directors, Kansas Junior College presidents, and selected private schools in Kansas. The interest generated by this summary report often results in requests for further interpretation of the data, additional data or additional copies of the report. These requests are answered through further promotional techniques. When information or service requests are received from parties other than the previously mentioned personnel or offices, these parties are added to the mailing list.

Personal contact may be initiated by the information user or by data dissemination personnel. If the user initiates the contact, he is normally responding to a local data need and has identified the K-MUST System as a possible source of this data. If dissemination personnel have initiated the contact, the contact may be for either promotional or reinforcement purposes.

When the user initiates the contact, the data dissemination personnel attempt to solve the local data needs and identify other possible data uses within the responsibility scope of the consumer. When dissemination personnel initiate the contact, they indicate possible data uses to the consumer.

Mass media releases consist of newspaper articles, journal articles, and radio interviews and announcements. These activities are initiated following a request from the respective mass media organizations. The releases contain a general description of the K-MUST Project, its purposes, operational techniques, and final data interpretation.

Speeches and presentations at educational meetings at the national, state and local levels have been highly significant in generating a recognition of the K-MUST Project. Speeches at the national level were presented at the American Vocational Education Research Association Conference in 1972 and the American Education Research Association Conference in 1973. Examples of state and local presentations are speeches given at conferences on area school operations, counseling, and career education, as well as presentations given to special groups such as the state supervisors, junior college administrators, area school administrators, and the State Board of Education.

Inservice training is a continuous process in Kansas. In many of these training sessions, the K-MUST staff have served as guest speakers.

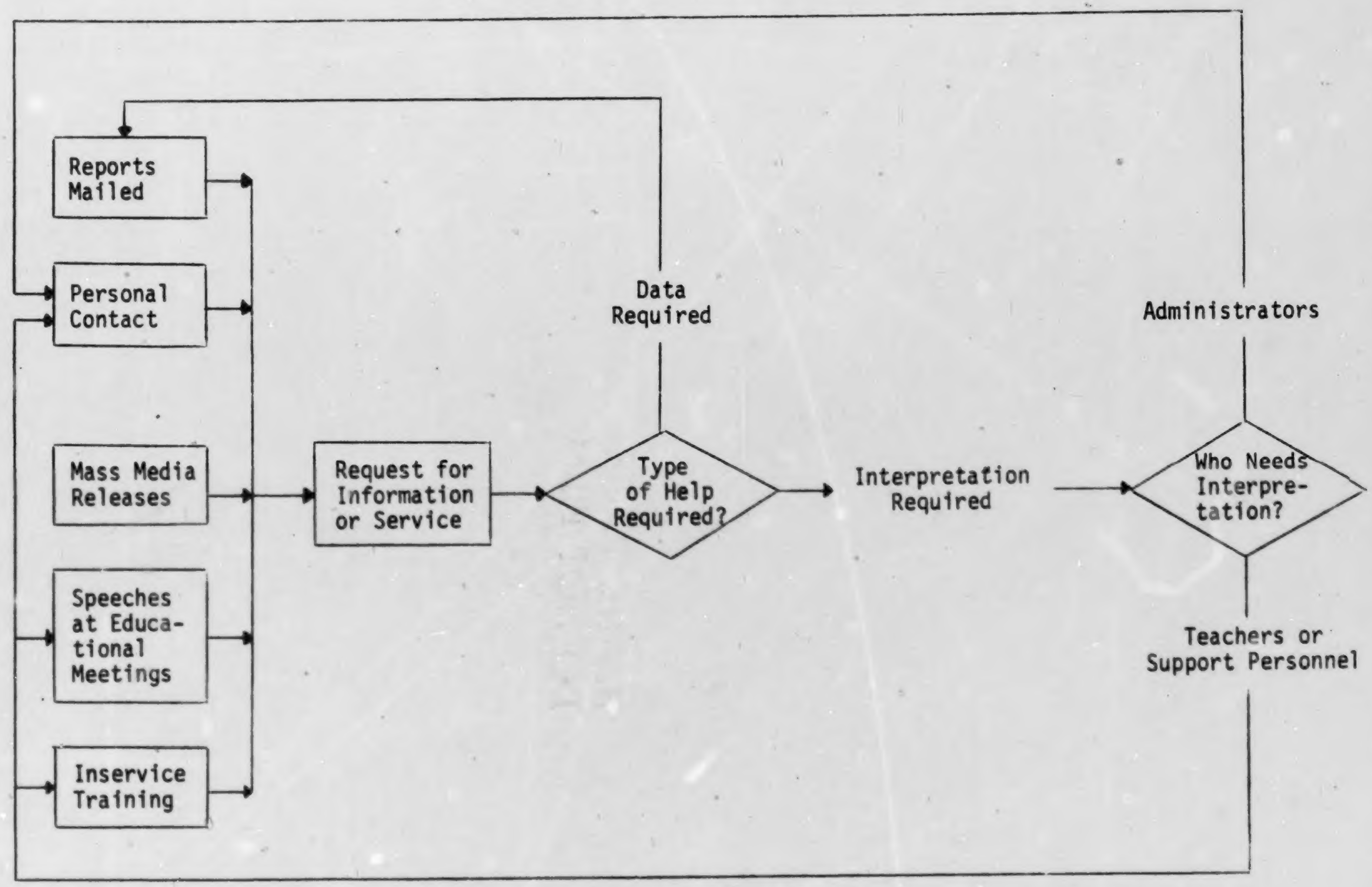


Figure 133: Data Dissemination System Flow Chart.

APPENDIX

TABLE OF CONTENTS

PART PAGE

MESSAGE TO TEACHERS AND GENERAL PROCEDURES....................................

I A SCRIPT TO BE USED BY TEACHERS TO GUIDE STUDENTS IN COMPLETING VE 50 ENROLLMENT SCAN SHEETS.....................

II A GUIDE FOR COMPLETING ITEM 15 ON VE 50 ENROLLMENT SCAN SHEETS...............

III LIST OF SCHOOL CODES.........................

IV LIST OF OCCUPATIONAL OBJECTIVE CODES........

V LIST OF CLASS CODES..........................

VI DEFINITIONS FOR ITEM 10......................

VII DEFINITIONS FOR ITEM 11......................

APPENDIX. SAMPLES OF VE 50 ENROLLMENT SCAN SHEETS

635

ENROLLMENT FORM Kansas State Department of Education, Division of Vocational Education

Students Signature:

Instructions: See back, please!

1 [illegible] YOUR NAME IN THE BLOCKS PROVIDED. BLACKEN THE [illegible] LETTER IN EACH [illegible].

LAST NAME FI MI

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

2 CIVIL RIGHTS ACT INFORMATION

THE FOLLOWING INFORMATION IS REQUESTED IN ORDER THAT WE MAY DEMONSTRATE TO THE U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE THIS INSTITUTIONS COMPLIANCE WITH TITLE VI OF THE 1964 CIVIL RIGHTS ACT. INFORMATION IS TO BE USED FOR STATISTICAL PURPOSES ONLY.

American Indian	[1]
Black American	[2]
Filipino-American	[3]
Oriental American (Chinese, Japanese, Korean)	[4]
Mexican American	[5]
Spanish American	[6]
Foreign Student	[7]
Caucasian	[8]
Other ________ SPECIFY	[9]

3 HIGHEST GRADE LEVEL ACHIEVED BY STUDENT

BELOW GRADE 7	[A]
GRADES 7 AND 8	[B]
GRADE 9	[C]
GRADE 10	[D]
GRADE 11	[E]
GRADE 12	[F]
GRADE 13	[G]
GRADE 14	[H]
GRADE 15	[I]
BEYOND GRADE 15	[J]

4 SEX

Male	[1]
Female	[2]

5 BIRTH DATE

MO DAY YR

0 1 2 3 4 5 6 7 8 9

6 SOCIAL SECURITY NO.

[0] [1] [2] [3] [4] [5] [6] [7] [8] [9]

7 SCHOOL CODE

0 1 2 3 4 5 6 7 8 9

8 CLASS CODE

0 1 2 3 4 5 6 7 8 9

9 OCCUPATIONAL OBJECTIVE

0 1 2 3 4 5 6 7 8 9

10 PROGRAM CLASSIFICATION

EXEMPLARY	[A]
GROUP GUIDANCE	[B]
REMEDIAL	[C]
WORK STUDY	[D]
PRE-VOCATIONAL	[E]
PRE-POST HIGH	[F]
COOPERATIVE B	[G]
COOPERATIVE G	[H]
APPRENTICESHIP	[I]
OTHER (REGULAR)	[J]

11 [illegible] LEVEL OF VOC. PROGRAM

BELOW GRADE 7	[A]
GRADES 7 AND 8	[B]
GRADE 9	[C]
GRADE 10	[D]
GRADE 11	[E]
GRADE 12	[F]
FIRST YEAR POST HIGH	[G]
SECOND YEAR POST HIGH	[H]
ADULT PREPARATORY	[I]
ADULT SUPPLEMENTARY	[J]

12 HOURS VOC. INST. PR/WK

[0] [1] [2] [3]

[0] [1] [2] [3] [4] [5] [6] [7] [8] [9]

13 COOP ONLY WORK HOUR PER WEEK

[0] [1] [2] [3] [4]

[0] [1] [2] [3] [4] [5] [6] [7] [8] [9]

14 COOP ONLY HOURLY WAGE

[0] [1] [2] [3] [4] [5] [6] [7] [8] [9]

15 FOR TEACHERS USE ONLY

A	B	C	D
NO	NO	NO	NO
YES	[1]	[1]	[1]
	[2]	[2]	[2]
	[3]	[3]	[3]
	[4]	[4]	[4]
		[5]	

MESSAGE TO TEACHERS

The system of student accounting involves three reports to be turned in by the teacher:

1. Student Enrollment Forms, VE 50, to be filled out by every vocational or technical student.
   Due date: *October 1.*
2. A set of IBM cards (one per student) indicating the student's status at the end of the school year.
   Due date: *May 31.*
3. A set of IBM follow-up cards (one per student who has completed your program or has left before completion with marketable skills) indicating the student's status.
   - A. Initial placement report on October 1 following graduation or completion.
     Due date: *October 1.*
   - B. First year report on June 1 following graduation or completion.
     Due date: *June 1.*
   - C. Third year report on June 1 of the third year following graduation or completion.
     Due date: *June 1.*
   - D. Fifth year report on June 1 of fifth year following graduation or completion.
     Due date: *June 1.*

These above reports are all that are absolutely necessary to enable the State Staff to report to the U. S. Office of Education. Additional forms relative to student accounting may be required by the State Service Directors for special purposes.

General procedures are as follows:

(NOTE: Do not staple or write beyond marked area on the forms. If the same student is in two classes of the same program, the teachers should decide which will have him fill out the VE 50 enrollment scan sheet. One student fills out more than one scan sheet only if he is in more than one program.)

1. VE 50 enrollment scan sheets and VE 50 cover forms will be mailed to school administrators during August for usage in all secondary programs and post-secondary programs. The administrator distributes to each teacher adequate VE 50 enrollment scan sheets for class enrollment and two VE 50 cover forms for each teacher in each program. Adult class teachers will be given four VE 50A cover forms in place of two VE 50 forms.

2. Have all students obtain a Social Security number by the third week of the first month of school.

3. Read this booklet thoroughly prior to assisting students in completing the VE 50 enrollment scan sheets.

4. Have a supply of number two or three pencils for student's use during completion of VE 50 enrollment scan sheets.

5. By the third week in September have all students complete the necessary parts of the VE 50 enrollment scan sheets. Part I of this booklet gives a teacher script for usage at this time.

6. By the third week in September each teacher should complete Item 15 on all VE 50 enrollment scan sheets filled out by his class and two copies of the VE 50 cover form or four copies of the VE 50A cover forms. (Codes for Item 15 are in Part II of this booklet.)

7. Completed VE 50 enrollment scan sheets and VE 50 or VE 50A cover forms are to be submitted to the school administrator for verification. Each teacher's of each program's forms will be enclosed in a *separate* envelope; marked on front of the envelope will be the name of the school, identification of program, and service area. Local administrators will mail envelopes so received by October 1 to:

   State Service Director
   State Department of Education
   Division of Vocational Education
   120 East Tenth Street
   Topeka, Kansas 66612

   Area schools will mail envelopes so received by October 1 to:

State AVTS Director
State Department of Education
Division of Vocational Education
120 East Tenth Street
Topeka, Kansas 66612

who will distribute to appropriate State Directors.

8. If the State Directors find the accuracy and quality of the submitted VE 50 enrollment scanner sheets unsatisfactory, the unsatisfactory forms will be returned to the local administrator to be re-submitted within one week of receiving date.

9. Throughout the year, if new students enter your program, they are to complete a VE 50 enrollment scanner sheet which should be mailed to the State Service Director or State AVTS Director as in "7".

10. Within two months after your enrollment forms have been submitted, you will receive two computer printouts of data on students in your classes. Check this data carefully to see if it is correct. If you find errors or omissions on any student, make corrections and/or additions on the computer printout sheets and return to your State Service Director or State AVTS Director within 10 days after receiving the computer printout.

11. Approximately May 1 you will receive a deck of completion cards (one for each student.) You are to mark the completion cards indicating the student's status at the end of the school year. Return these cards to your administrator and he will forward them to your State Service Director no later than May 31. If you have students for whom completion cards are not provided, you should send a list with the name, Social Security number, and the completion status for each of these students to your State Service Director.

12. Adult course teachers will receive their deck of completion cards after the return of the corrected computer printout sheets. These are to be marked and returned to your administrator accompanied with the re-submitting of two preliminarily approved VE 50A program forms (previously returned to your administrator by your Service Director.) Due date: *one week or one week after course's end.*

13. Prior to October 1 you will receive a deck of placement follow-up cards for students who have completed the program or left before completion with a marketable skill the preceeding year. You are to mark the follow-up card indicating the status of the student of September 15 of the current year. Return these cards to your administrator who will forward to the State Service Director no later than October 1.

14. By May 1 you will receive 3 decks of follow-up cards for students who have completed the program or left before completion with a marketable skill the preceeding year, 3 years preceeding and 5 years preceeding. You are to mark the 3 decks indicating the status of the student as of the current year. Return these cards to your administrator who will forward to the State Service Director no later than June 1.

15. Teachers whose programs do not run on a nine-month school year schedule will ignore deadline dates above. Enrollment forms should be completed and turned in to the school administrator for mailing to the State Service Directors within ten (10) days after the beginning of the program. Completion cards should be submitted within a week after the end of the program. Placement follow-up cards and follow-up cards should be submitted as in No. 13 and No. 14 above.

(NOTE: Any questions about use of this Guide should be referred to:

R. B. Daniels
Director of Industrial Education
913-296-3914
or
913-532-5537)

PART I

A SCRIPT TO BE USED BY TEACHERS TO GUIDE STUDENTS IN COMPLETING THE STATE VOCATIONAL AND TECHNICAL ENROLLMENT FORM

Introduction: THE DIVISION OF VOCATIONAL EDUCATION OF THE STATE DEPARTMENT OF EDUCATION REQUIRES EACH STUDENT ENROLLED IN VOCATIONAL OR TECHNICAL TRAINING IN THE STATE OF KANSAS TO COMPLETE AN ENROLLMENT FORM. THE INFORMATION WILL BE USED IN PLANNING FUTURE VOCATIONAL AND TECHNICAL TRAINING PROGRAMS AND WILL NOT AFFECT YOU OR YOUR GRADE IN ANY WAY. PLEASE PROVIDE THE MOST ACCURATE ANSWERS POSSIBLE.

THE FORM USED IS IN AN "OPTICAL SCAN" FORMAT. YOU WILL NEED A NUMBER TWO OR THREE PENCIL TO MAKE MARKS THAT CAN BE READ BY THE SCANNER. DO NOT USE AN INK PEN! IF YOU DO NOT HAVE THE CORRECT KIND OF PENCIL, I WILL PROVIDE ONE FOR YOUR USE AT THIS TIME.

WHO NEEDS A PENCIL?

(Teachers pass out pencils to students who need one.)

WE WILL COMPLETE THE FORM TOGETHER. PLEASE DO NOT MARK ON THE FORM UNTIL I TELL YOU WHERE AND HOW. IF YOU SHOULD MAKE A MISTAKE, ERASE CLEANLY AND MAKE THE CORRECT MARK. DO NOT MARK OUTSIDE THE BRACKETS WHEN YOU ARE MARKING ANSWERS.

(Teachers pass out forms.)

Student Signature: LOCATE THE LINE FOR STUDENT'S SIGNATURE ON THE UPPER LEFT OF THE FORM. HAS EVERYONE FOUND THE LINE FOR THE STUDENT'S SIGNATURE?

(Teachers help students find the appropriate line when necessary.)

PLEASE SIGN ON THE LINE PROVIDED. DO NOT MAKE ANY MARKS BELOW THE LINE.

Student's Name: LOCATE ITEM ONE IN THE UPPER LEFT PART OF THE FORM. IN THIS ITEM, YOU WILL CODE YOUR NAME. HAS EVERYONE FOUND ITEM ONE?

(Teachers help students find item one when necessary.)

PRINT YOUR LAST NAME IN THE BLOCKS PROVIDED. PUT THE FIRST LETTER OF YOUR LAST NAME IN THE FAR LEFT BLOCK. BLACKEN THE CORRESPONDING LETTER IN THE GRID UNDER EACH LETTER YOU HAVE

PRINTED. ARE THERE ANY QUESTIONS ABOUT HOW THIS IS DONE?

(Teacher helps students if necessary.)

IN ITEM ONE THERE ARE BLOCKS FOR YOUR FIRST AND MIDDLE INITIAL. DOES EVERYONE SEE THESE BLOCKS?

(Teacher helps students find appropriate blocks if necessary.)

PRINT YOUR FIRST AND MIDDLE INITIALS IN THESE BLOCKS. IF YOU DON'T HAVE A MIDDLE INITIAL, LEAVE THAT BLOCK BLANK. BLACKEN THE CORRESPONDING LETTERS UNDER THE FIRST AND MIDDLE INITIAL BLOCKS. HAS EVERYONE COMPLETED?

(Teacher helps students if necessary.)

Civil Rights Information: LOCATE ITEM TWO ON THE FORM. IT IS TO THE IMMEDIATE RIGHT OF ITEM ONE. HAS EVERYONE FOUND ITEM TWO?

(Teacher helps students if necessary.)

THIS ITEM REFERS TO YOUR RACE. THE DATA WILL BE USED BY THE STATE DEPARTMENT OF EDUCATION TO REPORT CIVIL RIGHTS INFORMATION TO THE FEDERAL GOVERNMENT. THE INFORMATION WILL NOT AFFECT YOU OR YOUR GRADE IN ANY WAY. PLEASE MARK THE MOST APPROPRIATE ANSWER IN YOUR OPINION. THERE SHOULD BE ONLY ONE MARK IN ITEM TWO. DOES ANYONE NEED HELP WITH THIS ITEM?

(Teacher helps students if necessary.)

(Note: This item refers to the students opinion as to what his race is. It does not refer to percentage of blood or any other definitive criteria.)

Highest Grade Level: LOCATE ITEM THREE ON THE FORM. THIS ITEM REFERS TO THE HIGHEST FORMAL GRADE LEVEL YOU HAVE COMPLETED. FOR EXAMPLE, IF YOU HAVE COMPLETED THE JUNIOR YEAR OF HIGH SCHOOL, YOU WOULD MARK "E" ON THE FORM. HAS EVERYONE FOUND ITEM THREE ON THE FORM?

(Teacher helps students if necessary.)

MARK THE HIGHEST GRADE LEVEL YOU HAVE COMPLETED. DOES ANYONE NEED HELP WITH THIS ITEM?

(Teacher helps students if necessary.)

Sex: LOCATE ITEM FOUR ON THE FORM. HAS EVERYONE FOUND ITEM FOUR?

(Teacher helps students if necessary.)

BLACKEN THE ONE IF YOU ARE MALE AND BLACKEN THE TWO IF YOU ARE FEMALE. DOES ANYONE NEED HELP WITH THIS ITEM?

(Teacher helps students if necessary.)

Birth Date: LOCATE ITEM FIVE ON THE FORM. HAS EVERYONE FOUND ITEM FIVE?

(Teacher helps students if necessary.)

PRINT THE NUMBERS THAT REPRESENT YOUR BIRTH DATE IN THE BLOCKS. EVERY BLOCK SHOULD BE FILLED. IF MONTH OR DAY IN YOUR BIRTH DATE ONLY HAS ONE DIGIT, USE A LEADING ZERO. FOR EXAMPLE, A ONE WOULD BE PRINTED AS ZERO-ONE. DOES ANYONE NEED HELP FILLING IN THE BLOCKS?

(Teacher helps students if necessary.)

BLACKEN THE CORRESPONDING NUMBERS UNDER EACH NUMBER YOU HAVE PRINTED. DOES ANYONE NEED HELP?

(Teacher helps students if necessary.)

(Note: January = 01, February = 02, March = 03, April = 04, May = 05, June = 06, July = 07, August = 08, September = 09, October = 10, November = 11, and December = 12.)

(Note: Year = last two digits of birth year.)

Social Security Number: LOCATE ITEM SIX ON THE FORM. HAS EVERYONE FOUND ITEM SIX?

(Teacher helps students if necessary.)

PRINT YOUR SOCIAL SECURITY NUMBER IN THE BLOCKS PROVIDED. IF YOU DO NOT HAVE A SOCIAL SECURITY NUMBER, LEAVE THIS ITEM BLANK. IF YOUR SOCIAL SECURITY NUMBER IS LONGER THAN NINE DIGITS, USE ONLY THE FIRST NINE DIGITS. DOES ANYONE NEED HELP?

(Teacher helps students if necessary.)

BLACKEN THE CORRESPONDING NUMBER UNDER EACH NUMBER YOU HAVE PRINTED. DO YOU HAVE ANY QUESTIONS?

(Teacher helps students if necessary.)

School Code: LOCATE ITEM SEVEN ON THE FORM. HAS EVERYONE FOUND ITEM SEVEN?

(Teacher helps students if necessary.)

(Special instructions to teachers: Locate the school code for your area school in Part III of this booklet. Write that school code on the chalkboard and inset it into this script when appropriate.)

ITEM SEVEN IS USED TO CODE OUR SCHOOL. OUR SCHOOL CODE IS ____________________ *(School code from Part III.)* IT IS WRITTEN ON THE CHALKBOARD. *(Teacher points to code number.)* PRINT THIS NUMBER IN THE BLOCKS PROVIDED. BLACKEN THE CORRESPONDING NUMBER UNDER EACH NUMBER YOU HAVE PRINTED. DO YOU NEED ANY HELP?

(Teacher helps students if necessary.)

Class Code: LOCATE ITEM EIGHT ON THE FORM. HAS EVERYONE FOUND ITEM EIGHT?

(Teacher helps students if necessary.)

ITEM EIGHT IS USED TO CODE THE DESCRIPTION OF THIS CLASS. OUR CLASS CODE IS ____________________ *(found in Part V of this booklet, page 21. (Teacher writes number on chalkboard.)* PRINT THIS CODE IN THE BLOCKS PROVIDED. BLACKEN THE CORRESPONDING NUMBERS UNDER EACH NUMBER YOU HAVE PRINTED. DO YOU HAVE ANY QUESTIONS?

(Teacher helps students if necessary.)

Occupational Objective: LOCATE ITEM NINE ON THE FORM. HAS EVERYONE FOUND ITEM NINE?

(Teacher helps students if necessary.)

(Special instructions to teacher: Occupational objective refers to the occupational reason that the student is taking your program. It is conceivable that every student will have a different occupational objective although all occupational objectives should be related to the class code. Occupational objectives and related codes can be found in Part IV of this booklet, page 15. Help each student select his occupational objective from the list. Again, the occupational objective should be from the general area for which your training is designed, e.g. Agriculture programs should have agriculture objectives. If the objective is not listed, select the most appropriate objective.)

PRINT YOUR OCCUPATIONAL OBJECTIVE CODE IN THE BLOCKS PROVIDED. BLACKEN THE CORRESPONDING NUMBER UNDER EACH NUMBER YOU HAVE PRINTED. DO YOU HAVE ANY QUESTIONS?

(Teacher helps students if necessary.)

Program Classification: LOCATE ITEM TEN ON THE FORM. HAS EVERYONE FOUND ITEM TEN?

(Teacher helps students when necessary.)

(Special instructions to teachers: Table VI, page 34 , of this booklet contains program definitions for Item 10. If your program is funded as a special category program consult with your administrator about which of the classifications you should mark. If you still have questions, call your State Service Director. If your program is not funded as special, you will use the other category.)

MARK ________________ *(whatever classificatione e.g. "A", "B", "C", etc.)* ON ITEM TEN. DO YOU HAVE ANY QUESTIONS?

(Teacher helps students if necessary.)

Grade Level of Program: LOCATE ITEM ELEVEN ON THE FORM. HAS EVERYONE FOUND ITEM ELEVEN?

(Teacher helps students if necessary. Definition of grade levels found in Table VII, page 36, of this booklet.)

THIS ITEM REFERS TO THE GRADE LEVEL CLASSIFICATION WITHIN THE VOCATIONAL PROGRAM. FOR EXAMPLE, IF YOU ARE A FIRST YEAR POST-HIGH SCHOOL STUDENT IN A TWO YEAR PROGRAM, YOU WOULD MARK "G", OR IF YOU ARE A 12th GRADER YOU WOULD MARK "F". TO UPGRADE YOUR SKILLS FOR YOUR PRESENT OCCUPATION, YOU WOULD MARK "J". BLACKEN THE APPROPRIATE LETTER FITTING YOUR PRESENT GRADE LEVEL CLASSIFICATION. DOES ANYONE NEED HELP?

(Teacher helps students if necessary.)

Hours Vocational Instruction: LOCATE ITEM TWELVE ON THE FORM. HAS EVERYONE FOUND ITEM TWELVE?

(Special instructions to teachers: This item refers to the total number of hours per week of formal classroom instruction only. If you meet five days a week for three hours per day, then the number would be fifteen. If you have two such classes with the same program the number would be thirty. Use a leading zero when this number is a single digit, e.g. five = 05.)

PRINT ______________ *(Number of hours per week)* IN THE BLOCKS PROVIDED, BLACKEN THE NUMBERS UNDER THE NUMBERS YOU HAVE PRINTED. DO YOU HAVE ANY QUESTIONS?

(Teacher helps students if necessary.)

FOR COOP TEACHERS ONLY

(Special instructions: If you do not teach a cooperative program, do not complete Items Thirteen and Fourteen.)

Work Hours Per Week: LOCATE ITEM THIRTEEN ON THE FORM. HAVE YOU FOUND ITEM THIRTEEN?

(Teacher helps students if necessary.)

THIS ITEM REFERS TO THE TOTAL NUMBER OF HOURS PER WEEK THAT YOU WORK. IF THIS NUMBER IS A SINGLE DIGIT, USE A LEADING ZERO, FOR EXAMPLE, FIVE WOULD BE WRITTEN AS ZERO-FIVE. PRINT THE NUMBER OF HOURS PER WEEK THAT YOU WORK IN THE BLOCKS PROVIDED. BLACKEN THE CORRESPONDING NUMBERS UNDER THE NUMBERS YOU HAVE PRINTED. DO YOU NEED ANY HELP?

(Teacher helps students when necessary.)

Starting Hourly Wage: LOCATE ITEM FOURTEEN ON THE FORM. HAS EVERYONE FOUND ITEM FOURTEEN.?

(Teacher helps students if necessary.)

THIS ITEM REFERS TO YOUR STARTING HOURLY WAGE (THIS YEAR.) THE DOUBLE LINE IS THE DECIMAL WITH DOLLARS PRINTED TO THE LEFT AND CENTS PRINTED TO THE RIGHT. PRINT YOUR STARTING HOURLY WAGE IN THE BLOCKS PROVIDED. BLACKEN THE CORRESPONDING NUMBERS UNDER THE NUMBERS YOU HAVE PRINTED. DO YOU NEED ANY HELP?

(Teacher helps students if necessary.)

(Note: The teacher is responsible for completing Item Fifteen on each student based on the guidelines found in Part II of this booklet.)

PART II

A GUIDE FOR COMPLETING ITEM 15

(NOTE: In Item 15, teachers must use their discretion in answering questions about student's handicaps and disadvantages. All columns must be answered.)

First answer Items B, C, and D.

ITEM B This item refers to the economically disadvantaged or the academically disadvantaged.

CODE	DISADVANTAGE
No	Neither economically nor academically disadvantaged.
1	Is a member of a family in which the yearly income is less than $5000. (economically disadvantaged.)
2	Academically disadvantaged and needs special programs or services.
3	Both economically and academically disadvantaged.

ITEM C This item refers to physical handicaps. If the student has one of the physical handicaps listed below, mark the one most appropriate code for ITEM C. If the student is not physically handicapped mark "No" for ITEM C.

CODE	HANDICAP
1	Hard of hearing
2	Deaf
3	Speech impaired
4	Visually impaired (not correctable to 20/20)
5	Crippled

ITEM D This item refers to mental handicaps. If the student has been identified by professional staff as having a mental handicap listed below, mark the one most appropriate code for ITEM D. If the student is not mentally handicapped, mark "No" for ITEM D.

CODE	HANDICAP
1	Trainable mentally retarded
2	Educationally mentally retarded
3	Emotionally disturbed
4	Learning disabilities
5	Two or more of the above

ITEM A This item refers to the disadvantaged or handicapped. If the student has no disadvantages or handicaps that cause him to have problems succeeding in this vocational-technical class mark "No". If the student has disadvantages or handicaps classified by ITEM B, ITEM C, ITEM D or any other disadvantage or handicap that could prevent success in this vocational-technical class mark "Yes".

PART III

LIST OF SCHOOL AGENCY, AND INSTITUTION CODES

(NOTE: If your school code is not listed, call Marilyn Fletcher 913-532-5537.)

SCHOOL	CODE
Central Kansas AVTS (Central Office)	383907001
Central Kansas AVTS (Buhler H.S.)	383907002
Central Kansas AVTS (Hutchinson J.C.)	383907003
Central Kansas AVTS (Hutchinson H.S.)	383907004
Central Kansas AVTS (McPherson H.S.)	383907005
Central Kansas AVTS (Newton H.S.)	383907006
Central Kansas AVTS (Sterling H.S.)	383907007
Cowley County CJC (AVTS Division)	185912001
Flint Hills AVTS (Central Office)	527905001
Kansas City AVTS (Central Office)	968914001
Kansas City AVTS (Argentine H.S.)	968914002
Kansas City AVTS (K.C. Jr. College)	968914003
Kansas City AVTS (Sumner H.S.)	968914004
Kansas City AVTS (Turner H.S.)	968914005
Kansas City AVTS (Wyandotte H.S.)	968914006
Kaw AVTS (Central Office)	824909001
Kaw AVTS (Topeka H.S.)	824909002
Liberal AVTS (Central Office)	815913001
Liberal AVTS (Coldwater H.S.)	815913002
Liberal AVTS (Greensburg H.S.)	815913003
Liberal AVTS (Haviland H.S.)	815913004
Liberal AVTS (Hugoton H.S.)	815913005
Liberal AVTS (Liberal H.S.)	815913006
Liberal AVTS (Mullinville H.S.)	815913007
Liberal AVTS (Wilmore H.S.)	815913008
Manhattan AVTS (Central Office)	752910001
North Central Kansas AVTS (Beloit)	581902001

	SCHOOL CODE
North Central Kansas AVTS (Plainville)	581902002
Northeast Kansas AVTS (Atchison)	050901001
Northeast Kansas AVTS (Leavenworth)	050901002
Northeast Kansas AVTS (Junior College)	050901003
Northwest Kansas AVTS (Goodland)	842906001
Northwest Kansas AVTS (Leoti)	842906002
Salina AVTS (Central Office)	788908001
Salina AVTS (Central O~~ffi~~ce) H.S.	788908002
Salina AVTS (South H.S.)	788908003
Southeast Kansas AVTS (Coffeyville)	590903001
Southeast Kansas AVTS (Columbus)	590903002
Southeast Kansas AVTS (Fort Scott H.S.)	590903003
Southeast Kansas AVTS (Junior College)	590903004
Southeast Kansas AVTS (Mobile Lab-Allen Co.)	590903005
Southwest Kansas AVTS (Central Office)	284904001
Southwest Kansas AVTS (Junior College)	284904002
Wichita AVTS (Central Office)	806911001
Wichita AVTS (Central Voc. Bldg.)	806911002
Wichita AVTS (Community Ed. Center)	806911003
Wichita AVTS (Voc. Tech. Center)	806911004
Wichita AVTS (Schweitzer)	806911005
Wichita AVTS (Dunbar H.S.)	806911006
Wichita AVTS (East H.S.)	806911007
Wichita AVTS (Heights H.S.)	806911008
Wichita AVTS (North H.S.)	806911009
Wichita AVTS (South H.S.)	806911010
Wichita AVTS (Southeast H.S.)	806911011
Wichita AVTS (West H.S.)	806911012

PART IV

LIST OF OCCUPATIONAL OBJECTIVE CODES FOR SECONDARY, POST-SECONDARY, AND ADULT

Select the occupational objective that best describes the primary reason for enrolling in this vocational-technical course.

(NOTE: If you have any questions regarding occupational objective codes call you State Service Director.)

VOCATIONAL AGRICULTURE

Agricultural Production	01.0100
Agricultural Supplies/Services	01.0200
Agricultural Mechanics	01.0300
Agriculture Products	01.0400
Ornamental Horticulture	01.0500
Agriculture Resources	01.0600
Forestry	01.0700
Agriculture, Other	01.9900

DISTRIBUTIVE EDUCATION

Advertising Services	04.0100
Apparel and Accessories	04.0200
Automotive	04.0300
Finance and Credit	04.0400
Floristry	04.0500
Food Distribution	04.0600
Food Services	04.0700
General Merchandise	04.0800
Handware, Building Materials, Farm and Garden Supplies and Equipment	04.0900
Home Furnishings	04.1000
Hotel and Lodging	04.1100
Industrial Marketing	04.1200

	OCCUPATIONAL OBJECTIVE
DISTRIBUTIVE EDUCATION (CONT.)	
Insurance	04.1300
International Trade	04.1400
Personal Services	04.1500
Petroleum	04.1600
Real Estate	04.1700
Recreation and Tourism	04.1800
Transportation	04.1900
Distributive Education, Other	04.9900
HEALTH OCCUPATIONS EDUCATION	
Dental Assistant	07.0101
Dental Hygienist (Associate)	07.0102
Dental Lab Technician	07.0103
Medical Lab Technician	07.0299
Medical Record Technician	07.0602
Medical Laboratory Assistant	07.0203
Nurse, Associate Degree	07.0301
Practical (Voc.) Nurse	07.0302
Nurses' Assistant (Aide) (Orderly)	07.0303
Surgical Technician	07.0305
Physical Therapy Assistant	07.0402
Occupational Therapy Assistant	07.0401
Recreational Theraphy Technician	07.0413
Radiologic Technology	07.0501
Environmental Health Technician	07.0721
Pollution Control Technician	07.0722
Mental Health Technician	07.0801
Medical Record Secretary	07.0900
Inhalation Therapy Technician	07.0903
Medical Office Assistant	07.0904
Medical Emergency Technician	07.0907
Nursing Home Administrator	07.0908
Dietetic Assistant	07.0912
Medical Assistant (Tech.)	07.0914
Ward Clerk	07.9902
Dietary Technologist	07.9911
Biomedical Electronic Technician	07.9921
Medical Instrumentation Technician	07.9922

OCCUPATIONAL OBJECTIVE

HOME ECONOMICS EDUCATION (USEFUL)

Comprehensive	09.0101
Child Development	09.0102
Clothing and Textiles	09.0103
Consumer Education	09.0104
Family Relations	09.0106
Foods and Nutrition	09.0107
Home Management	09.0108
Housing and Home Furnishings	09.0109
Other	09.0199

HOME ECONOMICS EDUCATION (GAINFUL)

Care and Guidance of Children	09.0201
Clothing Management, Production and Services	09.0202
Food Management, Production and Services	09.0203
Home Furnishings, Equipment and Services	09.0204
Institutional and Home Management, Production and Services	09.0205
Home Health Aide	09.0298
Other Occupational Preparation	09.0299

BUSINESS AND OFFICE EDUCATION

Accounting and Computing	14.0100
Business Data Processing Systems	14.0200
Filing, Office Machines	14.0300
Information, Communications Occupations	14.0400
Materials Support Occupations	14.0500
Personnel, Training and Related	14.0600
Stenographic, Secretarial and Related	14.0700
Supervisory and Administrative Management	14.0800
Typing and Related	14.0900
Other Office Occupations; N.E.C.	14.9900

TECHNICAL EDUCATION

Engineering Related Technology	16.0100
Aeronautical Technology	16.0101
Architectural	16.0103

	OCCUPATIONAL OBJECTIVE
Chemical Technology	16.0105
Civil Technology	16.0106
Electrical Technology	16.0107
Electronics Technology	16.0108
Electro-Mechanical Technology	16.0109
Environmental Control Technology	16.0110
Industrial Technology	16.0111
Instrumentation Technology	16.0112
Mechanical Technology	16.0113
Metallurgical Technology	16.0114
Nuclear Technology	16.0115
Petroleum Technology	16.0116
Scientific Data Processing	16.0117
Other Related Technology	16.0199
Other Technical Education, N.E.C.	16.0500
Fire and Safety Technology	16.0503
Forestry Technology	16.0504
Marine Technology	16.0505
Police Science Technology	16.0506
Other	16.9900

TRADE AND INDUSTRIAL EDUCATION

Air Conditioning and Refrigeration	17.0199
Appliance Repair	17.0200
Auto Body Repair	17.0301
Auto Mechanics	17.0302
Automotive Specialization	17.0303
Other Automotive Industries	17.0399
Aircraft Mechanics	17.0401
Air Traffic Control	17.0403
Blueprint Reading	17.0500
Business Machine Maintenance	17.0600
Commercial Art Occupations	17.0700
Commercial Photography Occupations	17.0900
Carpentry	17.0101
Electricity	17.1002
Heavy Equipment (Construction)	17.1003

OCCUPATIONAL OBJECTIVE

TRADE AND INDUSTRIAL EDUCATION (CONT)

Masonry	17.1004
Painting and Decorating	17.1005
Plastering	17.1006
Plumbing and Pipefitting	17.1007
Other Construction and Maintenance	17.1099
Custodial Services	17.1100
Diesel Mechanics	17.1200
Fluid Power	17.1201
Drafting Occupations	17.1300
Industrial Electrician	17.1401
Linemen	17.1402
Motor Repairmen (Electrical)	17.1403
Other Electrical Occupations	17.1499
Electronics Communications	17.1501
Electronics Industry	17.1502
Radio and Television	17.1503
Other Electronics Occupations	17.1599
Dry Cleaning	17.1601
Laundering	17.1602
Other Fabric Maintenance Services	17.1699
Foremanship, Supervision, and Management Development	17.1700
General Continuation	17.1800
Graphic Arts Occupations-Printing	17.1900
Instruments Maintenance and Repair (including watchmaking and repair)	17.2100
Foundry	17.2301
Machine Shop	17.2302
Machine Tool Operation	17.2303
Metal Trades (Combined)	17.2304
Sheet Metal	17.2305
Welding	17.2306
Other Metalworking Occupations	17.2399
Metallurgy Occupations	17.2400
Cosmetology	17.2600
Barbering	17.2601
Plastics Occupations	17.2700
Fireman Training	17.2801

OCCUPATIONAL OBJECTIVE

TRADE AND INDUSTRIAL EDUCATION (CONT)

Law Enforcement Training	17.2802
Other Public Services	17.2899
Baker	17.2901
Cook/Chef	17.2903
Waiter/Waitress	17.2904
Other Quantity Food Occupations	17.2999
Refrigeration	17.3000
Small Engine Repair (Internal Combustion)	17.3100
Electric Power and Generating Plants	17.3201
Pumping Plants	17.3202
Other Stationery Energy Sources Occupations	17.3299
Dressmaking	17.3301
Tailoring (Power Sewing Machine)	17.3302
Other Textile Production and Fabrication	17.3399
Shoe Manufacturing and Repair	17.3400
Upholstery	17.3500
Millwork and Cabinetmaking	17.3601
Other Woodworking Occupations	17.3699
Other Trades and Industry Occupations	17.9900
Industrial Mechanics	17.0304

PART V

CLASS CODES

(NOTE: If you have any questions regarding class codes, call your State Service Director.)

VOCATIONAL AGRICULTURE

SECONDARY CLASSES

Agricultural Related Occupations	01001
Agricultural Related Occupations II	01002
Vocational Agriculture I	01011
Vocational Agriculture II	01012
Vocational Agriculture III	01013
Vocational Agriculture IV	01014
Agricultural Mechanics I	01031
Agricultural Mechanics II	01032
Agricultural Mechanics III	01033
Agricultural Mechanics IV	01034
Horticulture I	01051
Horticulture II	01052
Horticulture III	01053
Horticulture IV	01054

POST-SECONDARY CLASSES

Farm and Ranch Management I	01811
Farm and Ranch Management II	01812
Feedlot Management I	01813
Feedlot Management II	01814
Ag Business I	01821
Ag Business II	01822
Ag Chemicals I	01823
Ag Chemicals II	01824
Irrigation I	01825

VOCATIONAL AGRICULTURE POST-SECONDARY CLASSES (CONT)

	CLASS CODES
Irrigation II	01826
Veterinary Asst. I	01827
Veterinary Asst. II	01828
Ag Mechanics I	01831
Ag Mechanics II	01832
Horticulture I	01851
Horticulture II	01852
Ag Technician I	01861
Ag Technician II	01862
Horticulture (Adult)	01951
Ag Mechanics (Adult)	01931
Young Farmer. (Adult)	01911
Adult Farmer	01912

DISTRIBUTIVE EDUCATION

SECONDARY CLASSES

Distributive Education (Preparatory)	04001
Distributive Education (Coop)	04002
Distributive Education (Project or Simulated)	04003

POST-SECONDARY CLASSES

Distributive Education (1-Year Program Coop)	04801
Distributive Education (2-Year Program Coop)	04802
Distributive Education (Project or Simulated)	04803

ADULT CLASSES

Distributive Education (All Adult Programs)	04901

HEALTH OCCUPATIONS EDUCATION

Nurses Aide	07411
Practical Nursing	07461
Medical Office Assistant	07401
Dental Hygiensit I	07421
Dental Hygienist II	07422
Dietetic Assistant	07437

HEALTH OCCUPATIONS EDUCATION (CONT)

	CLASS CODES
Occupational Therapy Assistant I	07423
Occupational Therapy Assistant II	07424
Biomedical Electronic Technician I	07425
Biomedical Electronic Technician II	07426
Environmental Health Technician I	07427
Environmental Health Technician II	07428
Pollution Control Technician I	07429
Pollution Control Technician II	07430
Dental Lab Technician I	07431
Dental Lab Technician II	07432
Medical Record Secretary I	07533
Medical Record Secretary II	07534
Medical Instrumentation Technician I	07433
Medical Instrumentation Technician II	07434
Mental Health Technician I	07553
Mental Health Technician II	07554
Dietary Technician I	07435
Dietary Technician II	07436
Medical Laboratory Technician I	07441
Medical Laboratory Technician II	07442
Nurse, A.D. I	07451
Nurse, A.D. II	07452
Nursing Home Administrator I	07553
Nursing Home Administrator II	07554
Surgical Technician I	07471
Surgical Technician II	07472
Physical Therapy Assistant I	07481
Physical Therapy Assistant II	07482
Pharmacology	07918
Radiologic Technician I	07491
Radiologic Technician II	07492
Recreational Therapy Technician I	07483
Recreational Therapy Technician II	07484
Inhalation Therapy Technician I	07501
Inhalation Therapy Technician II	07502
Medical Assistant I	07511
Dental Assistant	07535
Certified Lab Assistant	07445

HEALTH OCCUPATIONS EDUCATION (CONT)

	CLASS CODES
Medical Assistant II	07512
Medical Record Technician I	07531
Medical Record Technician II	07532
Medical Emergency Technician I	07541
Medical Emergency Technician II	07542
Health Care Supervision I	07551
Health Care Supervision II	07552
Radiological Technician I	07561
Radiological Technician II	07562
Emergency Medical Technician I	07571
Emergency Medical Technician II	07572
Nurse Assistant	07911
Ward Clerk	07916
Medical Terminology	07917
Medical Emergency Assistant	07922

HOME ECONOMICS EDUCATION

Comprehensive Home Economics I	09111
Comprehensive Home Economics II	09112
Comprehensive Home Economics III	09113
Comprehensive Home Economics IV	09114
Comprehensive Home Economics V	09115
Comprehensive Home Economics VI	09116
Child Development and Guidance I	09121
Child Development and Guidance II	09122
Child Care Services I	09211
Child Care Services II	09212
Clothing and Textiles I	09131
Clothing and Textiles II	09132
Clothing and Textiles III (Families as Consumers)	09133
Clothing Production and Services I	09221
Clothing Production and Services II	09222
Consumer Education I	09141
Consumer Education II	09142
Boy's Home Economics	09151
Tailoring	09134
Food and Culture	09174

HOME ECONOMICS EDUCATION (CONT)	CLASS CODES
Family Living I	09161
Family Living II	09162
Foods and Nutrition I	09171
Foods and Nutrition II	09172
Foods and Nutrition III (Families as Consumers)	09173
Food Production and Services I	09231
Food Production and Services II	09232
Home Management I	09181
Home Management II	09182
Institutional and Home Management Services I	09251
Housing and Home Furnishing I	09191
Housing and Home Furnishing II	09192
Home Furnishing, Equipment and Services I	09241
Home Health Aide I	09981
Home Health Aide II	09982
Introduction to Occupations I	09991
Introduction to Occupations II	09992
Occupational Home Economics Cluster I	09994
Occupational Home Economics Cluster II	09995
Cooperative Home Economics I	09996
Cooperative Home Economics II	09997

OFFICE EDUCATION

SECONDARY CLASSES	
Business Education (Preparatory)	14001
Business Education (Coop)	14002
Business Education (Project or Simulated)	14003
Business Education (Data Processing)	14004

POST-SECONDARY CLASSES	
Business Education (1-Year Program - Coop)	14801
Business Education (2-Year Progarm - Coop)	14802
Business Education (1-Year Program - Not Coop)	14803
Business Education (2-Year Program - Not Coop)	14804
Business Education (Project or Simulated)	14805
Business Education (Data Processing)	14806

CLASS CODES

OFFICE EDUCATION (CONT)
ADULT CLASSES

Business Education (Adult)	14901

INDUSTRIAL EDUCATION

Air Conditioning and Regrigeration (1080 hrs)	17011
Air Conditioning and Refrigeration (1400-1600 hrs)	17012
Air Conditioning and Refrigeration (2160 hrs)	17013
Air Conditioning and Refrigeration (Coop)	17014
Air Conditioning and Refrigeration (Adult)	17015
Appliance Repair (1080 hrs)	17021
Appliance Repair (1400-1600 hrs)	17022
Appliance Repair (2160 hrs)	17023
Appliance Repair (Coop)	17024
Appliance Repair (Adult)	17025
Auto Body Repair (1080 hrs)	17031
Auto Body Repair (1400-1600 hrs)	17032
Auto Body Repair (2160 hrs)	17033
Auto Body Repair (Coop)	17034
Auto Body Repair (Adult)	17035
Auto Mechanics (1080 hrs)	17041
Auto Mechanics (1400-1600 hrs)	17042
Auto Mechanics (2160 hrs)	17043
Auto Mechanics (Coop)	17044
Auto Mechanics (Adult)	17045
Automotive Specialization (1080 hrs)	17051
Automotive Specialization (1400-1600 hrs)	17052
Automotive Specialization (2160 hrs)	17053
Automotive Specialization (Coop)	17054
Automotive Specialization (Adult)	17055
Other Automotive Industries (1080 hrs)	17061
Other Automotive Industries (1400-1600 hrs)	17062
Other Automotive Industries (2160 hrs)	17063
Other Automotive Industries (Coop)	17064
Other Automotive Industries (Adult)	17065

INDUSTRIAL EDUCATION (CONT)

	CLASS CODES
Aircraft Mechanics	17071
Aircraft Mechanics (Coop)	17074
Aircraft Mechanics (Adult)	17075
Air Traffic Control	17081
Air Traffic Control (Coop)	17084
Air Traffic Control (Adult)	17085
Blueprint Reading	17091
Blueprint Reading (Adult)	17095
Business Machine Maintenance	17101
Business Machine Maintenance (Coop)	17104
Business Machine Maintenance (Adult)	17105
Commercial Art Occupation (1080 hrs)	17111
Commercial Art Occupation (1400-1600 hrs)	17112
Commercial Art Occupation (2160 hrs)	17113
Commercial Art (Coop)	17114
Commercial Art (Adult)	17115
Commercial Photography Occupations (1080 hrs)	17121
Commercial Photography Occupations (1400-1600 hrs)	17122
Commercial Photography Occupations (2160 hrs)	17123
Commercial Photography Occupations (Coop)	17124
Commercial Photography Occupations (Adult)	17125
Carpentry (1080 hrs)	17131
Carpentry (1400-1600 hrs)	17132
Carpentry (2160 hrs)	17133
Carpentry (Coop)	17134
Carpentry (Adult)	17135
Electricity (1080 hrs)	17141
Electricity (1400-1600 hrs)	17142
Electricity (2160 hrs)	17143
Electricity (Coop)	17144
Electricity (Adult)	17145
Heavy Equipment-Construction (1080 hrs)	17151
Heavy Equipment-Construction (1400-1600 hrs)	17152
Heavy Equipment-Construction (2160 hrs)	17153
Heavy Equipment-Construction (Coop)	17154
Heavy Equipment-Construction (Adult)	17155

INDUSTRIAL EDUCATION (CONT)

	CLASS CODES
Masonry (1080 hrs)	17161
Masonry (1400-1600 hrs)	17162
Masonry (2160 hrs)	17163
Masonry (Coop)	17164
Masonry (Adult)	17165
Painting and Decorating	17171
Painting and Decorating (Coop)	17174
Painting and Decorating (Adult)	17175
Plastering	17181
Plastering (Coop)	17184
Plastering (Adult)	17185
Plumbing and Pipefitting (1080 hrs)	17191
Plumbing and Pipefitting (1400-1600 hrs)	17192
Plumbing and Pipefitting (2160 hrs)	17193
Plumbing and Pipefitting (Coop)	17194
Plumbing and Pipefitting (Adult)	17195
Other Construction and Maintenance (1080 hrs)	17201
Other Construction and Maintenance (1400-1600 hrs)	17202
Other Construction and Maintenance (2160 hrs)	17203
Other Construction and Maintenance (Coop)	17204
Other Construction and Maintenance (Adult)	17205
Custodial Services	17211
Custodial Services (Coop)	17214
Custodial Services (Adult)	17215
Diesel Mechanics (1080 hrs)	17221
Diesel Mechanics (1400-1600 hrs)	17222
Diesel Mechanics (2160 hrs)	17223
Diesel Mechanics (Coop)	17224
Diesel Mechanics (Adult)	17225
Fluid Power (1080 hrs)	17231
Fluid Power (1400-1600 hrs)	17232
Fluid Power (2160 hrs)	17233
Fluid Power (Coop)	17234
Fluid Power (Adult)	17235
Drafting Occupations (1080 hrs)	17241
Drafting Occupations (1400-1600 hrs)	17242

INDUSTRIAL EDUCATION (CONT)

	CLASS CODES
Drafting Occupations (2160 hrs)	17243
Drafting Occupations (Coop)	17244
Drafting Occupations (Adult)	17245
Industrial Electrician (1080 hrs)	17251
Industrial Electrician (1400-1600 hrs)	17252
Industrial Electrician (2160 hrs)	17253
Industrial Electrician (Coop)	17254
Industrial Electrician (Adult)	17255
Linemen (1080 hrs)	17261
Linemen (1400-1600 hrs)	17262
Linemen (2160 hrs)	17263
Linemen (Coop)	17264
Linemen (Adult)	17265
Motor Repairmen - Electrical (1080 hrs)	17271
Motor Repairmen - Electrical (1400-1600 hrs)	17272
Motor Repairmen - Electrical (2160 hrs)	17273
Motor Repairmen - Electrical (Coop)	17274
Motor Repairmen - Electrical (Adult)	17275
Other Electrical Occupation (1080 hrs)	17281
Other Electrical Occupation (1400-1600 hrs)	17282
Other Electrical Occupation (2160 hrs)	17283
Other Electrical Occupation (Coop)	17284
Other Electrical Occupation (Adult)	17285
Electronics Communication (1080 hrs)	17291
Electronics Communication (1400-1600 hrs)	17292
Electronics Communication (2160 hrs)	17293
Electronics Communication (Coop)	17294
Electronics Communication (Adult)	17295
Electronics Industry (1080 hrs)	17301
Electronics Industry (1400-1600 hrs)	17302
Electronics Industry (2160 hrs)	17303
Electronics Industry (Coop)	17304
Electronics Industry (Adult)	17305
Radio and Television (1080 hrs)	17311
Radio and Television (1400-1600 hrs)	17312
Radio and Television (2160 hrs)	17313

INDUSTRIAL EDUCATION (CONT)

	CLASS CODES
Radio and Television (Coop)	17314
Radio and Television (Adult)	17315
Other Electronics Occupation (1080 hrs)	17321
Other Electronics Occupation (1400-1600 hrs)	17322
Other Electronics Occupation (2160 hrs)	17323
Other Electronics Occupation (Coop)	17324
Other Electronics Occupation (Adult)	17325
Drycleaning	17331
Drycleaning (Coop)	17334
Drycleaning (Adult)	17335
Laundering	17341
Laundering (Coop)	17344
Laundering (Adult)	17345
Other Fabric Maintenance Services	17351
Other Fabric Maintenance Services (Coop)	17354
Other Fabric Maintenance Services (Adult)	17355
Foremanship, Supervision and Management Development	17361
Foremanship, Supervision and Management Development (Coop)	17364
Foremanship, Supervision and Management Development (Adult)	17365
General Continuation	17371
General Continuation (Coop)	17374
General Continuation (Adult)	17375
Graphic Arts Occupations - Printing (1080 hrs)	17381
Graphic Arts Occupations - Printing (1400-1600 hrs)	17382
Graphic Arts Occupations - Printing (2160 hrs)	17383
Graphic Arts Occupations - Printing (Coop)	17384
Graphic Arts Occupations - Printing (Adult)	17385
Instruments Maintenance and Repair - including watchmaking repair	17391
Instruments Maintenance and Repair - including watchmaking repair (Coop)	17394
Instruments Maintenance and Repair - including watchmaking repair (Adult)	17395
Foundry	17401
Foundry (Coop)	17404
Foundry (Adult)	17405
Machine Shop (1080 hrs)	17411

INDUSTRIAL EDUCATION (CONT)

	CLASS CODES
Machine Shop (1400-1600 hrs)	17412
Machine Shop (2160 hrs)	17413
Machine Shop (Coop)	17414
Machine Shop (Adult)	17415
Machine Tool Operations (1080 hrs)	17421
Machine Tool Operations (1400-1600 hrs)	17422
Machine Tool Operations (2160 hrs)	17423
Machine Tool Operations (Coop)	17424
Machine Tool Operations (Adult)	17425
Metal Trades - Combined (1080 hrs)	17431
Metal Trades - Combined (1400-1600 hrs)	17432
Metal Trades - Combined (2160 hrs)	17433
Metal Trades - Combined (Coop)	17434
Metal Trades - Combined (Adult)	17435
Sheet Metal	17441
Sheet Metal (Coop)	17444
Sheet Metal (Adult)	17445
Welding (1080 hrs)	17451
Welding (1400-1600 hrs)	17452
Welding (2160 hrs)	17453
Welding (Coop)	17454
Welding (Adult)	17455
Other Metalworking Occupations (1080 hrs)	17461
Other Metalworking Occupations (1400-1600 hrs)	17462
Other Metalworking Occupations (2160 hrs)	17463
Other Metalworking Occupations (Coop)	17464
Other Metalworking Occupations (Adult)	17465
Metallurgy Occupations	17471
Metallurgy Occupations (Coop)	17474
Metallurgy Occupations (Adult)	17475
Cosmetology	17481
Barbering	17491
Plastics Occupations (1080 hrs)	17501
Plastics Occupations (1400-1600 hrs)	17502
Plastics Occupations (2160 hrs)	17503
Plastics Occupations (Coop)	17504

INDUSTRIAL EDUCATION (CONT)

	CLASS CODES
Plastics Occupations (Adult)	17505
Fireman Training	17511
Fireman Training (Coop)	17514
Fireman Training (Adult)	17515
Law Enforcement Training	17521
Law Enforcement Training (Coop)	17524
Law Enforcement Training (Adult)	17525
Other Public Services	17531
Other Public Services (Coop)	17534
Other Public Services (Adult)	17535
Baker	17541
Baker (Coop)	17544
Baker (Adult)	17545
Cook and Chef	17551
Cook and Chef (Coop)	17554
Cook and Chef (Adult)	17555
Meat Cutter	17561
Meat Cutter (Coop)	17564
Meat Cutter (Adult)	17565
Waiter and Waitress	17571
Waiter and Waitress (Coop)	17574
Waiter and Waitress (Adult)	17575
Other Quantity Food Occupations	17581
Other Quantity Food Occupations (Coop)	17584
Other Quantity Food Occupations (Adult)	17585
Refrigeration	17591
Refrigeration (Coop)	17594
Refrigeration (Adult)	17595
Small Engine Repair - Int. Comb.	17601
Small Engine Repair - Int. Comb. (Coop)	17604
Small Engine Repair - Int. Comb. (Adult)	17605
Electric Power and Generating Plants	17611
Electric Power and Generating Plants (Coop)	17614
Electric Power and Generating Plants (Adult)	17615
Pumping Plants	17621
Pumping Plants (Coop)	17624
Pumping Plants (Adult)	17625
Other Stationary Energy Sources Occup.	17631
Other Stationary Energy Sources Occup. (Coop)	17634

INDUSTRIAL EDUCATION (CONT)

	CLASS CODES
Other Stationary Energy Sources Occup. (Adult)	17635
Dressmaking	17641
Dressmaking (Coop)	17644
Dressmaking (Adult)	17645
Tailoring - Power Sewing Machine	17651
Tailoring - Power Sewing Machine (Coop)	17654
Tailoring - Power Sewing Machine (Adult)	17655
Other Textile Production and Fabrication	17661
Other Textile Production and Fabrication (Coop)	17664
Other Textile Production and Fabrication (Adult)	17665
Shoe Manufacturing and Repair	17671
Shoe Manufacturing and Repair (Coop)	17674
Shoe Manufacturing and Repair (Adult)	17675
Upholstery	17681
Upholstery (Coop)	17684
Upholstery (Adult)	17685
Millwork and Cabinetmaking (1080 hrs)	17691
Millwork and Cabinetmaking (1400-1600 hrs)	17692
Millwork and Cabinetmaking (2160 hrs)	17693
Millwork and Cabinetmaking (Coop)	17694
Millwork and Cabinetmaking (Adult)	17695
Other Woodworking Occupations (1080 hrs)	17701
Other Woodworking Occupations (1400-1600 hrs)	17702
Other Woodworking Occupations (2160 hrs)	17703
Other Woodworking Occupations (Coop)	17704
Other Woodworking Occupations (Adult)	17705
Other Trades and Industry Occupations	17711
Other Trades and Industry Occupations (Coop)	17714
Other Trades and Industry Occupations (Adult)	17715
Industrial Mechanics	17721

TECHNICAL EDUCATION

Engineering Related Technology (1080 hrs)	16011
Engineering Related Technology (2160 hrs)	16012
Engineering Related Technology (Adult)	16013

TECHNICAL EDUCATION (CONT)

	CLASS CODES
Aeronautical Technology (1080 hrs)	16021
Aeronautical Technology (2160 hrs)	16022
Aeronautical Technology (Adult)	16023
Architectural Technology (1080 hrs)	16031
Architectural Technology (2160 hrs)	16032
Architectural Technology (Adult)	16033
Chemical Technology (1080 hrs)	16041
Chemical Technology (2160 hrs)	16042
Chemical Technology (Adult)	16043
Electrical Technology (1080 hrs)	16051
Electrical Technology (2160 hrs)	16052
Electrical Technology (Adult)	16053
Civil Technology (1080 hrs)	16061
Civil Technology (2160 hrs)	16062
Civil Technology (Adult)	16063
Electronic Technology (1080 hrs)	16071
Electronic Technology (2160 hrs)	16072
Electronic Technology (Adult)	16073
Electro-Mechanical Tech. (1080 hrs)	16081
Electro-Mechanical Tech. (2160 hrs)	16082
Electro-Mechanical Tech. (Adult)	16083
Environmental Control Tech. (1080 hrs)	16091
Environmental Control Tech. (2160 hrs)	16092
Environmental Control Tech. (Adult)	16093
Industrial Technology (1080 hrs)	16101
Industrial Technology (2160 hrs)	16102
Industrial Technology (Adult)	16103
Instrumentation Tech. (1080 hrs)	16111
Instrumentation Tech. (2160 hrs)	16112
Instrumentation Tech. (Adult)	16113
Mechanical Technology (1080 hrs)	16121
Mechanical Technology (2160 hrs)	16122
Mechanical Technology (Adult)	16123
Metallurgical Technology (1080 hrs)	16131
Metallurgical Technology (2160 hrs)	16132
Metallurgical Technology (Adult)	16133

TECHNICAL EDUCATION (CONT)

	CLASS CODES
Nuclear Technology (1080 hrs)	16141
Nuclear Technology (2160 hrs)	16142
Nuclear Technology (Adult)	16143
Petroleum Technology (1080 hrs)	16151
Petroleum Technology (2160 hrs)	16152
Petroleum Technology (Adult)	16153
Scientific Data Tech. (1080 hrs)	16161
Scientific Data Tech. (2160 hrs)	16162
Scientific Data Tech. (Adult)	16163
Other Related Technology (1080 hrs)	16171
Other Related Technology (2160 hrs)	16172
Other Related Technology (Adult)	16173
Other Technical Education, N.E.C. (1080 hrs)	16181
Other Technical Education, N.E.C. (2160 hrs)	16182
Other Technical Education, N.E.C. (Adult)	16183
Fire and Safety Technology (1080 hrs)	16191
Fire and Safety Technology (2160 hrs)	16192
Fire and Safety Technology (Adult)	16193
Forestry Technology (1080 hrs)	16201
Forestry Technology (2160 hrs)	16202
Forestry Technology (Adult)	16203
Marine Technology (1080 hrs)	16211
Marine Technology (2160 hrs)	16212
Marine Technology (Adult)	16213
Police Science Technology (1080 hrs)	16221
Police Science Technology (2160 hrs)	16222
Police Science Technology (Adult)	16223
Other (1080 hrs)	16231
Other (2160 hrs)	16232
Other (Adult)	16233

PART VI

DEFINITIONS FOR ITEM 10
VOCATIONAL EDUCATION ENROLLMENT REPORT

(A) Exemplary Voc. Program--A model innovative occupational program designed to broaden occupational aspirations and opportunities for youth; to find new ways to create a bridge between school and earning a living.

(D) Work-Study Program--A program to provide assistance to students who are attending full-time vocational education classes or accepted for enrollment who need financial assistance in order to continue their education. The program provides 80% of wages paid a qualified vocational student who works a limited number of hours for the school or other public agency or institution. Under work-study, authorized jobs would not necessarily have anything to do with the vocation in which a student is being trained (Need not relate to the vocational objective of the student) and students under this program cannot replace regular employees.

(E) Pre-Vocational--Instruction to assist individuals in making an informal and meaningful occupational choice and including instruction designed to familiarize individuals with a broad range of occupations for which special skills are required and the requisites for careers are included in the instruction.

(F) Pre-Post High--A secondary vocational education program with a special component designed for specific preparation for post secondary vocational education programs.

(G) Cooperative Vocational Education Program--A program of Voc. Ed. for persons who, through a signed agreement (or arrangement) between the school, the student and employer, receive instruction, including required academic courses and related vocational instruction by alternation of study in school with a job in any occupational field, but these two experiences must be planned and supervised by the school and employers so that each contributes to the student's education and to his employability. Work periods and school attendance may be alternated in accordance with State Plan.

(I) Apprenticeship Classes--An extension program in which adults who are employed as apprentices or learners can receive an organized program of related instruction pertinent to their respective fields (minimum of 144 hours related instruction per year). The training program usually is designed by a committee of employer-employee representatives and directed by them. The apprentice works under a written agreement and is paid a graduated percentage of the journeyman wages while in training.

(J) Other (Regular)--Regular vocational or technical programs conducted under Part B of the Act.

PART VII

DEFINITIONS FOR ITEM 11
VOCATIONAL EDUCATION ENROLLMENT REPORT

(I) Adult Preparatory (part-time)--A program designed to provide training for adults in the pursuit and desire to prepare for useful employment. May serve to prepare persons to enter and advance in an occupation or to equip workers with new and different skills demanded by technological changes (usually short-term duration).

(J) Adult Supplementary--An upgrading program of skill development and/or related instruction which extends or supplements present employment. For adults desiring to refresh, up-date, or upgrade competencies needed in their employment or for advancement in responsibilities.